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Introduction to

Intellectual Property

Introduction to Intellectual Property

SENIOR CONTRIBUTING AUTHORS

DAVID KLINE, PULITZER PRIZE-NOMINATED JOURNALIST

DAVID KAPPOS, FORMER DIRECTOR, UNITED STATES PATENT AND TRADEMARK OFFICE

PRESENTED BY GARY MICHELSON, M.D.

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OpenStax
Rice University
6100 Main Street MS-375
Houston, Texas 77005

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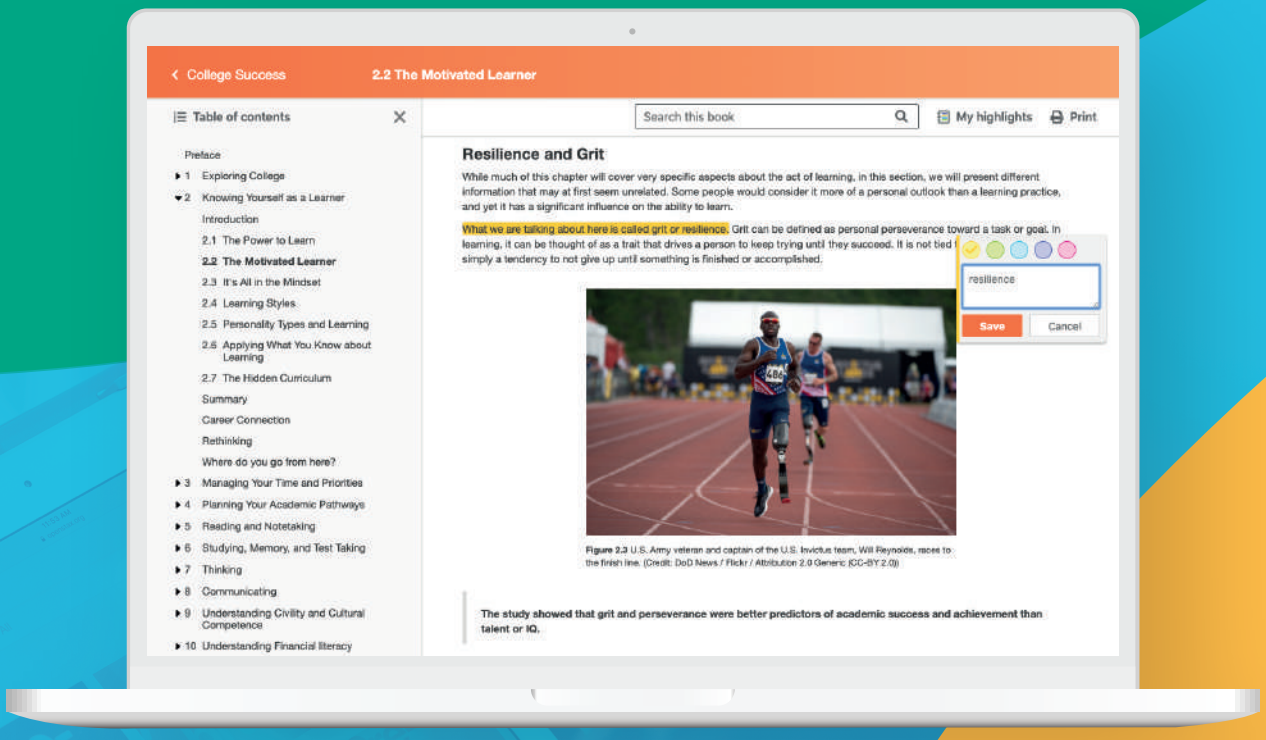

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CONTENTS

Preface and Foreword

Welcome to *Introduction to Intellectual Property*, an OpenStax resource. This textbook was written to increase student access to high-quality learning materials, maintaining the highest standards of academic rigor at little to no cost.

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Format

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About Introduction to Intellectual Property

This unique resource provides a clear, effective introduction to the legal issues and applications of Intellectual Property. The book is directed at students and ordinary citizens with no formal background in the field, and who may be studying entrepreneurship, marketing, computer science, engineering, or other fields. It is useful in an array of courses ranging from Business Law and Product Design to Information Systems and many

others.

Introduction to Intellectual Property covers patent basics and enforcement, copyright, trademark, and trade secrets. Each chapter is authored by an expert in the respective field, all under the guidance of principal author David Kline and executive editor David Kappos. The luminaries involved with this project represent the forefront of knowledge and experience on these topics, which makes the text an even more valuable resource for instructors, students, and professionals.

While informative for anyone with a professional or personal interest in intellectual property, this resource is a formal textbook, and is designed for the effective instruction of college students. Each chapter contains learning objectives, subsections, and topically oriented review questions.

Introduction to Intellectual Property was originally developed by the Michelson 20MM Foundation, released under the title *The Intangible Advantage*. It remains available along with an accompanying online course, video series, and other resources. Visit https://michelsonip.com/intangible-advantage/ for more information, and see below for more detailed descriptions of these assets.

About the Authors

Senior Contributing Authors

David Kline
David Kline was a Pulitzer-Prize-nominated journalist and author who covered some of the world's most important stories over the last 30 years for the *New York Times, Wall Street Journal, Christian Science Monitor, Rolling Stone, the Atlantic, Harvard Business Review, CBS* and *NBC TV*, and other national media. He was also a contributing writer for *Wired* magazine for many years. In more recent years, Kline wrote on a variety of business and technology topics, with a special focus on intellectual property issues. His bestselling book *Rembrandts in the Attic* from Harvard Business Press is considered the seminal work on patent strategy within corporate America, and it has helped to shape the direction of corporate and policy-maker thinking on patent issues. In 2016, Kline was named one of the "World's Top 300 Intellectual Property Strategists" by *Intellectual Asset Management* magazine.

David Kappos
David Kappos is widely recognized as one of the world's foremost leaders in the field of intellectual property, including intellectual property management and strategy, the development of global intellectual property norms, laws and practices as well as commercialization and enforcement of innovation based assets.

From August 2009 to January 2013, Mr. Kappos served as Under Secretary of Commerce and Director of the United States Patent and Trademark Office (USPTO). In that role, he advised the President, Secretary of Commerce and the Administration on intellectual property policy matters. As Director of the USPTO, he led the Agency in dramatically reengineering its entire management and operational systems as well as its engagement with the global innovation community. He was instrumental in achieving the greatest legislative reform of the U.S. patent system in generations through passage and implementation of the Leahy Smith America Invents Act, signed into law by the President in September 2011.

Contributing authors

Kerry L. Bundy, Partner, Faegre Drinker
Randall E. Kahnke, Partner, Faegre Drinker
Robert G. Krupka, Krupka Law Group

Presented By Gary K. Michelson, M.D.

Reviewers

Paul R. Michel, Chief Judge (ret.) U.S. Court of Appeals for the Federal Circuit
Richard Epstein, Director, Classical Liberal Institute at New York University

Paul M. Janicke, University of Houston Law Center
Louis Foreman, Founder and CEO, Edison Nation
Sharon Beaudry, Oregon Institute of Technology
Nancy R. Olsen Waldron, Lasell University

Student and Instructor Resources

Animated Video Series The Michelson 20MM Foundation has provided a series of brief animated and narrated videos explaining the basics of Intellectual Property. Available on YouTube at https://www.openstax.org/l/IPBasics.

Michelson 20MM Foundation Educator Portal This robust offering from the providers of this textbook offers educators widespread resources to support their teaching. These include Assessment sets, Lecture Slides, and Discussion Questions. Go to https://michelsonip.com/teachip/ to learn more and log in. (Note that access to this site is not maintained by OpenStax, and will require a separate account creation process.)

Online Course The Michelson 20MM Foundation has also provided a comprehensive and free online course through course provider Udemy. Visit https://michelsonip.com/free-course/ to register and learn more.

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Foreword: The Intangible Advantage

I did not start out to be an inventor.

I wanted to be a doctor. That's all I ever wanted to be, ever since the day I sat at my grandmother's kitchen table—I must have been seven years old—and smelled her flesh burning on the stove. You see, my grandmother suffered from syringomyelia, a crippling spinal disease that results in terrible back pain and the loss of sensation to pain and temperature in the extremities, especially the hands. When I saw the flames licking up through her fingers that day, I screamed, and she quickly doused her hand in the sink.

"Don't worry," she told me. "One day you'll become a doctor and you'll fix me."

Some 20 years later, I had graduated medical school and completed a residency in orthopedic surgery, and was doing a fellowship in spinal surgery at St. Luke's Medical Center in Houston when I stumbled upon a problem in an otherwise routine case. The case was a discectomy—the removal of a ruptured disk that is pressing on a nerve root. I noticed that because the disc had ruptured slowly over time, it had created a bone spur, which was like a little rhinoceros horn of bone, as hard as ivory. So I asked myself, How is taking out that disc going to help the patient if the bone spur is going to cause him pain for the rest of his life?

I wanted to take that bone spur out, but I knew of no way to do that because it was sticking straight up about five inches down inside a narrow little hole in the patient's back. So I asked a very famous surgeon in the hospital, "How do you get that bone spur out?"

"Do not put a high speed burr in there and attempt to grind it down," he said. He had tried that once, and ended up damaging the patient's spinal cord and paralyzing her for life. That sounded to me like a pretty strong argument against trying that approach again.

Then I asked the head of my fellowship program, "How do I get that bone spur out?" He explained that he once tried using a grabber instrument called a ronguer to try to break off the bone spur. But the pressure exerted on the instrument caused it to explode, sending fragments all throughout the dural sac. Luckily, he was able to retrieve the pieces and repair the damage. But once again, here was an approach that didn't exactly recommend itself.

No matter which spine expert I asked, the response was always the same. They all told me what *not* to do. Leave the bone spur alone, they said—just sew up the patient and send him home, even if it means dooming him to a lifetime of pain. Be content to follow the age-old motto of the physician, "First, do no harm."

Be content? George Bernard Shaw once said that inventors are a disgruntled lot. And I must have been pretty disgruntled with the lack of any solution for that bone spur, because I decided to invent a solution myself.

Instead of trying to grind down the spur (with potentially disastrous results) or break it off (again, with potentially disastrous results), I came up with a counterintuitive approach. You see, I realized that while a bone spur itself is the hardest bone known to man, it sits atop the vertebrae, the inside of which is much softer and more mesh-like. What if I tried tapping the spur into the softer vertebrae?

I found a tool normally used for an entirely different purpose and thought it might suffice for the job. And the next time I had a discectomy case with a bone spur, I tried out my new tool.

I tapped the bone spur lightly with it, but nothing happened. I tapped it again, harder, but still nothing happened. Then I tapped it really hard, and that's when I heard a "pop" and felt the instrument suddenly sink down. Now, I knew I couldn't have damaged any nerves or structures because I had retractors holding the nerve and the dural sac out of the way. But when I looked inside, I could not see the bone spur anywhere. It was gone. And I thought, "Uh-oh."

So I brought in an x-ray machine and looked for the bone spur. It turned out the spur had corked the very hole that I had created when I broke it off and pushed it into the vertebrae—like a cork in a bottle. There wasn't a drop of blood anywhere, and no damage to any tissue. In other words, my procedure was self-sealing! To this day, it remains the best solution for this problem.

Over the next few months, I designed a set of instruments better suited to removing bone spurs no matter where they were located in the spinal canal. I gave the drawings to a machinist, and he created the tools according to my design. Soon I was using them routinely on bone spur cases, and getting such good results that other surgeons started sending me their bone spur cases.

But eventually, these surgeons began asking me to provide them with a set of tools of their own. I said sure, and for each request, I would ask my machinist to fabricate another set of tools. Finally, the machinist told me that it would be cheaper just to make a hundred sets at once, since the major cost of fabricating the tools was in setting up the jigs on the machine.

I thought that made perfect sense. After all, the demand for the tools from other surgeons was growing. In addition, I was disgruntled enough with the standard of care in other areas of spinal treatment that I had already invented several other new spinal surgery tools. So I started a little company to sell my tools and devices.

I quickly realized, of course, that I needed to patent my inventions to protect all the time, money, and effort that I had invested to develop them. After all, if you don't patent your inventions, especially in a competitive industry like medical devices, others will simply copy those inventions with impunity and sell them at a lower cost because they didn't have to invest anything to develop them in the first place. That's a great way to drive the innovators out of any industry and halt any further technical advances in that field.

Over the next 15 years or so, I continued to invent various new spinal surgery tools and techniques, eventually obtaining more than 950 patents worldwide for innovations that fundamentally changed the practice of spinal surgery. These innovations are today employed in the vast majority of spinal surgeries worldwide.

In fact, they became so widely adopted and so central to modern spinal treatment that in 2005 the giant medical device company Medtronic purchased the majority of my patent portfolio of spinal surgery inventions for $1.35 billion. Having retired from medical practice, I now devote my energy and philanthropy to inventing new solutions to problems beyond orthopedics.

The Michelson Medical Research Foundation, launched with a $100 million grant, is dedicated to funding cutting-edge medical research that would be considered to avant-garde to receive funding from the National Institutes of Health or other conventional funding sources. In just one area of medical research, we committed to funding the prestigious Sabin Vaccine Institute with an initial $5 million five-year grant to develop effective vaccines against the parasitic worms that infect 1.4 billion of the world's poorest people with devastating effect.

The Michelson Found Animals Foundation promotes pet adoption and offers $50 million in research grants as well as a $25 million prize to any scientists who discover a way to chemically spay and neuter animals via a single, low-cost injection. Found Animals Foundation is one of the largest privately funded animal welfare foundations in the world and focuses on helping to end shelter euthanization and to improve the lives of pets and their people.

My wife Alya and I also donated $50 million to the University of Southern California for the USC Michelson Center for Convergent Bioscience, to pursue medical breakthroughs in cancer and other diseases.

The Michelson 20MM Foundation is dedicated to ensuring that equitable postsecondary educational opportunities that lead to meaningful careers are accessible to all, in part by making textbooks and new forms of interactive educational content available for free online to college students. At the cutting edge of higher education, the foundation helps forward-thinking entrepreneurs, nonprofits, and organizations close the opportunity gap. The Michelson Institute for Intellectual Property, a flagship Michelson 20MM initiative, provides access to intellectual property (IP) education to support budding inventors and entrepreneurs and close the existing "IP education gap."

Which brings me to the important book you are now reading. *The Intangible Advantage: Understanding Intellectual Property in the New Economy* is the first-ever text on intellectual property (IP) aimed at ordinary citizens, especially college students. As such, it is an important innovation in and of itself—one that hopefully will solve a big problem in American education. I'm particularly proud to have this newly released version of the textbook adapted for OpenStax, an initiative that has been at the cutting edge of innovation in higher education since its founding in 2012, and is also one of the Michelson 20MM Foundation's inaugural grantees. As such, it is an important innovation in and of itself — one that hopefully will solve a big problem in American education.

Until now, intellectual property has been taught only in law schools or the occasional business school seminar. In today's knowledge economy, however, this is no longer sufficient. That's because over the last 40 years, intellectual property has grown from an arcane, narrowly-specialized legal field into a major force in American social and economic life. It comprises an astonishing 45 percent of total U.S. GDP today, and represents 80 percent of the market value of all publicly-traded companies in the U.S.

Put simply, intellectual property is now the chief engine of wealth creation and economic growth in the world. And as such, it has become a subject of vital importance for all Americans, not just those in the legal profession.

There's a scene in the 1967 movie *"The Graduate"* when Mr. McGuire (Walter Brooke) offers career advice to a young Benjamin Braddock (Dustin Hoffman)? "Plastics!" he says. "There's a great future in plastics. Will you think about it?"

Half a century later, intellectual property has become the new watchword for almost any career of the future. Look around and you'll see IP's imprint everywhere. The business pages are filled with headlines of corporate "patent wars." Art journals debate whether the artist Richard Prince's appropriation of other people's work is infringement or fair use. Music critics discuss the implications of the $7 million copyright infringement verdict against Robin Thicke and Pharrell Williams for allegedly borrowing certain musical themes from the work of soul singer Marvin Gaye. Indeed, from Silicon Valley startups to Fortune 500 board rooms, from MIT engineering labs to Wall Street trading desks, and from college business seminars to debates in Congress over

global trade policy, intellectual property issues now lie at the heart of almost every arena of modern life today.

And as a result, any young person today who does not understand at least the basics of intellectual property—and its value and role in science, business, arts, and the professions—will find themselves at a distinct disadvantage in the world of tomorrow.

This book comes in several forms, suitable for different uses. The traditional ebook version of *The Intangible Advantage* contains the full text—including the hidden history of the U.S. patent system, the world's first democratized patent system—as well as links to the first-ever series of popular animated videos (https://www.openstax.org/l/IPBasics) on the basics of intellectual property. These videos answer such common questions as "Can I Patent That?" (https://www.openstax.org/l/CanIPatent) and "What If Someone Infringes Your Trademark?" (https://www.openstax.org/l/WhatIfInfringeTrademark)

Finally, *The Intangible Advantage* has a companion online course, Intellectual Property: Inventors, Entrepreneurs, Creators, available for free on Udemy. The online course is for self-directed learners — whether college students in an IP fundamentals course, users of the United States Patent and Trademark Office and the U.S. Copyright Office, or young executive trainees working in corporate law and engineering departments in firms both large and small.

Such a ground-breaking body of work would not have been possible without the extraordinary contributions of some of the leading lights in the intellectual property world over the past four years.

Principal author, the late David Kline, did a masterful job of translating the hidden history, complex legal doctrines, and practical workings of the U.S. intellectual property system into popular and engaging prose. It probably helped that he is *not* a lawyer by background, but rather a former war correspondent-turned-business journalist who wrote *"Rembrandts in the Attic,"* the seminal work on patent strategy in corporate America published by Harvard Business Press. In addition to his deep curiosity about the role of IP in the new economy, David was passionate about illuminating even the most complex subject matter for the benefit of today's students. His impact on this text, and our entire Michelson Institute for Intellectual Property initiative, is beyond measure.

Contributing author Robert G. Krupka is one of the foremost patent litigators in the nation. Anyone who wants to understand the complex (and controversial) American system of patent litigation can do no better than read his chapter on "Patent Enforcement."

Contributing authors Randall E. Kahnke's and Kerry L. Bundy's expert rendition of the role and importance of trade secret law in the American economy will be much appreciated by students as well as business leaders in every industry. This is especially the case now that Congress enacted the first federal trade secret act.

To be sure, a book that explains the complex workings of patent, copyright, trademark, and trade secret law in popular, non-legalese prose—especially one largely written by a non-lawyer (albeit a recognized expert in the field)—needs careful vetting. And for our "peer-reviews" we relied on the advice and counsel of a number of leading IP academics and practitioners, five of whom stand out most strongly for their contributions.

Chief Judge (ret.) Paul R. Michel of the U.S. Court of Appeals for the Federal Circuit, the nation's main court for patent appeals, made enormous contributions in reviewing the manuscript not only for its legal theories but for its explanations of practical aspects of the patent system as well. His carefully-reasoned insider's explanation of how the patent system *really* works made all of us who worked on this project feel privileged to sit at the feet of such a patient master.

Professor Richard Epstein is the Laurence A. Tisch Professor of Law at New York University, a senior fellow at the Hoover Institution, and professor emeritus and senior lecturer at the University of Chicago. Considered one of the most influential legal thinkers of modern times, Professor Epstein's detailed review of the manuscript proved vital to this project.

Professor Paul M. Janicke teaches in the Intellectual Property and Information Law Program at the University

of Houston Law Center. His critique and guidance early on in the development of the manuscript was invaluable.

Inventor and entrepreneur Louis Foreman is the founder and CEO of *Edison Nation*, an invention commercialization organization, and creator and executive producer of the Emmy Award-winning PBS TV show, *Everyday Edisons*. His insights into the commercialization challenges faced by independent inventors were extremely helpful.

Finally, former U.S. Undersecretary of Commerce and Director of the U.S. Patent and Trademark Office David Kappos served as executive editor of the book. Especially for a subject like intellectual property that is so sharply defined by subtle nuances of law and practice, his unique expertise at the very center of the IP system helped to sculpt the manuscript's final shape.

I would be remiss if I did not mention the tireless leadership of Michelson 20MM executive producer Phil Kim, who was both midwife and guiding hand of this project from its inception four years ago until its final realization in April of 2016. He reminds us all just how valuable clear vision and calm steadiness in the face of trials really are in an effort such as this.

Similar praise and gratitude must be offered to Mayra Lombera and Marisa Moosekian, the Michelson 20MM producers who somehow managed to make all the myriad moving parts (and people) in this project fit together successfully. Whatever personality or production challenges arose, they somehow—I don't really know how—made this whole thing work.

America's Founders created the world's first democratized intellectual property system for the common man. Now, the brightest minds in intellectual property have collaborated to democratize this once-inscrutable subject and bring you the world's first intellectual property textbook, online course, and videos series for readers and learners like you.

I hope you will find it enlightening—and useful.

–Gary K. Michelson, M.D. December, 2020

1

Patent Basics

Figure 1.1 (credit: modification of work “Float Glass Unloading” by ICAPlants/wikimedia.org, CC BY 3.0)

Chapter Outline

Introduction

1.1 The Foundations of Patent Protection

X000001
July 31, 1790

The United States.

To all to whom these Presents shall come, Greeting.

Whereas Samuel Hopkins of the City of Philadelphia and State of Pennsylvania hath discovered an Improvement, not known or used before such Discovery, in the making of Pot ash and Pearl ash by a new Apparatus and Process, that is to say, in the making of Pearl ash 1st by burning the raw Ashes in a Furnace, 2d by dissolving and boiling them when so burnt in Water, 3rd by drawing off and settling the ley, and 4th by boiling the ley into Salts which then are the true Pearl ash; and also in the making of Pot ash by pearling the Pearl ash so made as aforesaid; which Operation of burning the raw Ashes in a Furnace preparatory to their Dissolution and boiling in water is new, leaves little Residuum, and produces a much greater Quantity of Salt: These are therefore in pursuance of the Act, entituled "An Act to promote the Progress of useful Arts," to grant to the said Samuel Hopkins, his Heirs, Administrators and Assigns, for the Term of fourteen Years, the sole and exclusive Right and Liberty of using and vending to others the said Discovery of burning the raw Ashes previous to their being dissolved and boiled in Water, according to the true Intent and Meaning of the Act aforesaid. In Testimony whereof I have caused these Letters to be made Patent, and the Seal of the United States to be hereunto affixed. Given under my Hand at the City of New York this thirty first Day of July in the Year of our Lord one thousand seven hundred & Ninety.

G. Washington

City of New York July 31st 1790.

I do hereby certify that the foregoing Letters Patent were delivered to me in pursuance of the Act, entitled "An Act to promote the Progress of useful Arts," that I have examined the same, and find them conformable to the said Act.

Edm: Randolph Attorney General for the United States.

Figure 1.2 The first U.S. Patent (credit: US Patent Office via Wikimedia Commons / Public Domain)

Learning Objectives

After completing this section, you will be able to

- Describe the philosophical logic behind granting patents.
- Describe the role of patents in fostering invention.

Do Patents Really Promote Innovation?

Before reading this section, please watch this overview video (https://openstax.org/l/DoPatentsPromoteInnovation) covering the usefulness of patents - how ironic that a system for granting exclusive rights to inventors is the greatest vehicle for knowledge-sharing and technology transfer ever devised by human beings.

What Is a Patent?

A **patent** is an **intellectual property** right granted by the government of a nation to an inventor that gives them the exclusive right to the invention for up to 20 years, in exchange for disclosing the details of the new technology to society for its ultimate benefit.

In the United States, a **patent** is a legal instrument in the form of a document issued by the United States Patent and Trademark Office (USPTO). It gives the inventor of any new, useful, and non-obvious machine, process, manufacture, or composition of matter the right "to exclude others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States" for a limited time in exchange for public disclosure of the invention.[i] A U.S. patent is only recognized domestically, and cannot be enforced in another country.

History of Patents in the United States

The legal foundation for U.S. intellectual property rights was laid by the Founders in 1787, in the very first Article of the U.S. Constitution, which outlined the precepts of our democratic society. In Article 1, Section 8, Clause 8 of the Constitution, Congress was given the authority 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".[ii]

America was the first country in the world to enshrine intellectual property rights in its national constitution. And the Founders did this quite deliberately, says B. Zorina Khan, an economic historian at Bowdoin College whose book, *The Democratization of Invention: Patents and Copyrights in American Economic Development*, was awarded the Alice Hanson Jones Prize for an outstanding work in economic history.[iii] "To the men who gathered in Philadelphia to 'promote the general welfare,'" Khan wrote, "it was self-evident that ideas, industrial and cultural inventions, and democratic values were integrally related. American democratic institutions would ensure that rewards accrued to the deserving based on [merit] rather than on the arbitrary basis of class, patronage, or privilege."

Indeed, the Founders viewed intellectual property rights as vital to the new nation's economic survival. As George Washington himself stated in his first annual address to Congress in 1790, "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 to the introduction of new and useful inventions."

The question is, with all the challenges they faced, why did the Founders think it so crucial to create a strong intellectual property system? Their reasons were both universal—i.e., applying to all societies—and also very particular to America's revolutionary experience.

"Bargain" Theory vs. "Natural Rights" Theory

Every society that affirms intellectual property rights offers two justifications for doing so: the **bargain or contract theory** and the **natural rights theory**.

"Bargain" Theory

The "bargain" theory starts with the commonsense premise that people will be encouraged to invent new products and services that benefit society if they are likely to profit by doing so. The U.S. Constitution thus offers inventors a bargain: If you invent something useful—e.g., a cotton gin in 1794 that boosted agricultural production a hundredfold, or a semiconductor 163 years later that sparked the creation of a trillion-dollar new industry and millions of jobs—then the Constitution and statutes say that, as a quid pro quo, you can have the exclusive right to that invention for a "limited time," after which it goes into the public domain and belongs to society.

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i United States Patent and Trademark Office. (2012, January 26). Patents. Retrieved from www.uspto.gov/patents/index.jsp

ii U.S. Constitution Arr. 1, § 8

iii B. Zorina Khan, *The Democratization of Invention: Patents and Copyrights in American Economic Development*, 1790-1920, Cambridge University Press, 2005.

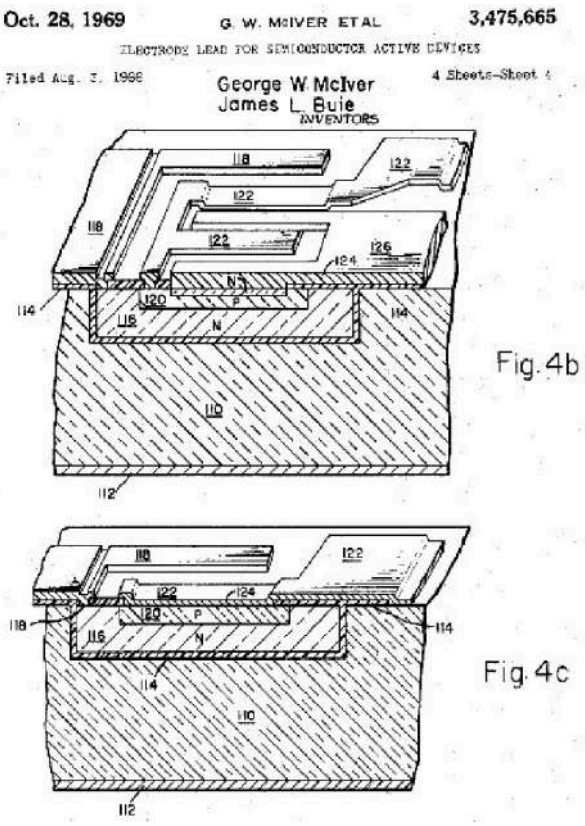

Figure 1.3 Patent for an electrode lead for semiconductor devices(credit: US Patent Office via Wikimedia Commons / Public Domain)

There is something so simple yet economically potent about this concept. As Abraham Lincoln—America's only presidential patentee (No. 6469 (https://www.openstax.org/l/US6469) for a device to lift boats over shoals)—noted, the beauty of the patent system is that it "added the fuel of interest to the fire of genius."

"Natural Rights" Theory

The "natural rights" theory, meanwhile, invokes another commonsense premise that most of us instinctively hold to be true: that the product of mental labor is by all rights the property of its creator, no less than the product of physical labor is the property of its creator (or of the person who purchases it from that creator). This is what Daniel Webster was referring to when he said, "The American Constitution does not attempt to give an inventor a right to their invention, or an author a right to his composition; it recognizes an original, pre-existing, inherent right of property in such invention or composition."

This right is not absolute, of course, and inventors' inherent rights may at times be circumscribed by national security or other concerns. But in exchange for disclosing to the public the nature and details of the invention, the Constitution authorizes the government to enforce the inventor's exclusive property right to that invention for a limited time.

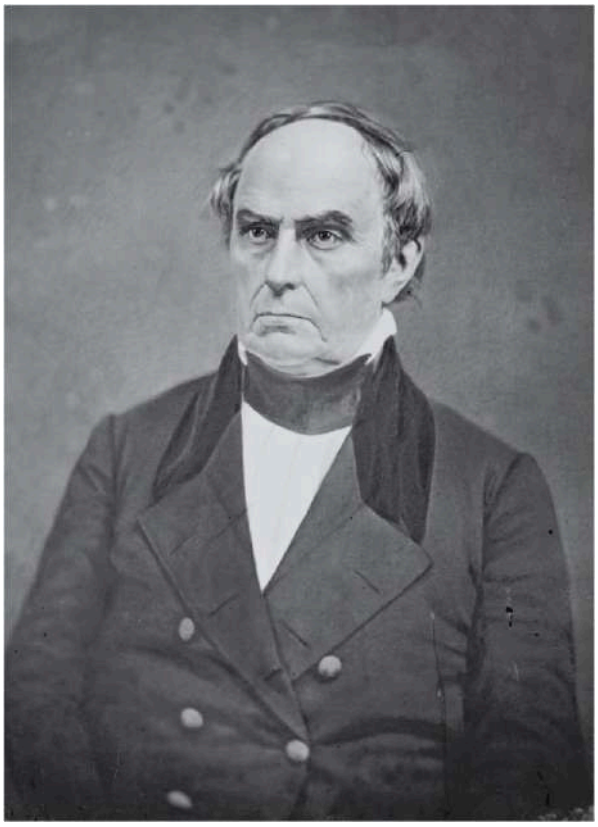

Figure 1.4 Daniel Webster, an American lawyer and statesman. (credit: Wikipedia / Public Domain)

Two important public policy goals are thus served. The inherent property rights of inventors and authors to their creations are protected, thereby helping to ensure that the wellsprings of creation and productivity do not dry up for lack of incentive. And yet the benefits derived from these inventions and creations are ultimately harnessed to the public good through disclosure, thus promoting the progress of the nation and "the general welfare" of its citizens.

How Patents Foster Innovation

To help understand why patent rights not only encourage inventors but also promote the wider diffusion of new technology for the benefit of society, economic historians Naomi Lamoreaux and the late Kenneth Sokoloff suggested the following thought experiment:

Imagine a world in which there was no patent system to guarantee inventors property rights to their discoveries. In such a world, inventors would have every incentive to be secretive and to guard jealously their discoveries from competitors [because those discoveries] could, of course, be copied with impunity. "By contrast, in a world where property rights in invention were protected, the situation would be very different. Inventors would now feel free to promote their discoveries as widely as possible so as to maximize returns either from commercializing their ideas themselves or from [licensing] rights to the idea to others. The protections offered by the patent system would thus be an important stimulus to the exchange of technological information in and of themselves. Moreover, it is likely that the cross -fertilization that resulted from these information flows would be a potent stimulus to technological change. [iv]

iv Naomi R. Lamoreaux and Kenneth L. Sokoloff, *"Inventors, Firms, and the Market for Technology: U.S. Manufacturing in the Late Nineteenth and Early Twentieth Centuries,"* Historical Paper 98, National Bureau of Economic Research, Cambridge, Mass., 1997.

It's more than just "likely." Extensive research in the United States and other nations shows that patents have served as a powerful stimulant to technological knowledge sharing. A 2006 survey published by the French economists Francois Leveque and Yann Meniere, for example, found that 88 percent of U.S., European, and Japanese businesses rely upon the information disclosed in patents to keep up with technology advances and direct their own R&D efforts.[v]

Patents Don't Block Innovation, They Promote It

From the earliest days of the United States, patent and legal records show how inventors (including Thomas Edison) regularly kept abreast of developments in their fields. They did this by studying patent descriptions published by both the USPTO as well as by industry publications such as Scientific American, which was founded in 1845 by Munn and Company, the leading patent agency of the nineteenth century, expressly to spread new technological knowledge and facilitate the buying and selling of patents. For example, Elias E. Reis—inventor of a number of devices to exploit the heat generated by electrical currents—reported that when he read in the Official Gazette in 1886 about a patent issued to Elihu Thomson for a new method of electric welding, "there immediately opened up to my mind a field of new applications to which I saw I could apply my system of producing heat in large quantities."[vi] In many industries, specialized journals kept readers informed about new patents of interest.

In fact, new research in 2012 discovered that rather than blocking development, Thomas Edison's seminal 1880 incandescent lamp patent (No. 223,898 (https://www.openstax.org/l/US223898A)) actually "stimulated downstream development work" that resulted in "new technologies of commercial significance [including] the Tesla coil, hermetically sealed connectors, chemical vapor deposition process, tungsten lamp filaments and phosphorescent lighting that led to today's fluorescent lamps."[vii]

Even the word "patent" signifies its social purpose of disclosure. It is derived from the Latin patent meaning "open," and is the present participle of "pate-re," meaning "to stand wide open."

This explains the origin of the term "letters patent" ("letters that lie open"), which refer to the patent documents issued by the English Crown. These were not closed with a seal but were instead kept open, with the seal hanging at the bottom, notifying all not to infringe upon the patent.

v Francois Leveque and Yann Meniere, "Patents and Innovation: Friends or Foes?" CERNA (Centre d'economie industrielle Ecole Nationale Superieure des Mines de Paris), December, 2006.

vi See "Record of Elias E. Reis," 8, *Thomson v. Reis*, case 13,971, box 1,845, Interference Case Files, 1836-1905, Records of the Patent Office, Record Group 241, National Archives, courtesy of B. Zorina Khan.

vii Ron D. Katznelson, "Inventing Around Edison's Incandescent Lamp Patent: Evidence of Patents' Role in Stimulating Downstream Development," May, 2012, derived from: http://works.bepress.com/cgi/viewcontent.cgi?article=1073&context=rkatznelson


SCIENTIFIC AMERICAN.

THE ADVOCATE OF INDUSTRY AND ENTERPRISE, AND JOURNAL OF MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME 1. NEW-YORK, THURSDAY, AUGUST 8, 1845. NUMBER 1.

THE SCIENTIFIC AMERICAN.

IMPROVED RAIL-ROAD CARS.

CATALOGUE OF AMERICAN PATENTS

Figure 1.5 Front page of the first "Scientific American" issue, August 8, 1845. (credit: modification of work by Scientific American via Wikimedia Commons / Public Domain)

As with any economic and legal instrument, patents have the potential to slow innovation if their grant of exclusive rights is too broad. But the overwhelming preponderance of economic research and real-world experience demonstrate that, on balance, intellectual property rights tend to stimulate invention, economic growth, and the diffusion of new technological knowledge in every country where they exist.

This fact by itself, however, does not explain why the U.S. patent system became a model for much of the world. To understand why it did—and how it helped build the most successful economy in the history of the world—we must examine the revolutionary design of the U.S. patent system itself and the ways in which it overcame the weaknesses of earlier patent systems.

1.2 The Weakness of Early Patent Systems

Figure 1.6 (credit: modification of work "Ink Jar and Quills" by Student of Rhythm via flickr / CC BY 2.0)

Learning Objectives

After completing this section, you will be able to

- Outline the history of patents from antiquity through the 1700s.
- Identify flaws in early European patent systems.

History of Patents: 500 BC to the 1700s

Given the commonsense logic of granting patents to stimulate invention, it comes as no surprise that patent-like incentives date all the way back to antiquity. In the ancient Greek city of Sybaris (located in what is now southern Italy) in 500 BC, "encouragement was held out to all who should discover any new refinement in luxury, the profits arising from which were secured to the inventor by patent for the space of a year."[viii]

The first formal patent legal institutions were developed in the Republic of Venice in the mid-1400s. The Venetian Statute of 1474 decreed that the inventors of new and useful devices would be protected from infringers and copiers for ten years so long as they disclosed the details of their inventions. Most Venetian patents were granted in the field of glass making, and when a large number of these glass makers emigrated to other countries in Europe, they sought similar protections from the local authorities. This is how the notion of patent rights, and their expression in patent legal systems, began to spread and gain acceptance throughout Europe.

Initially, however, English and French monarchs used patents not simply to stimulate invention, but also to grant exclusive trade monopolies to those favored by the court. In the reign of Elizabeth I in the latter 1500s, some 50 patent monopolies were granted over the trade in such staples as salt, soap, starch, iron, and paper. Critics said these "enriched the monopolist and robbed the community" while doing absolutely nothing to stimulate new technology or industry.

A growing public outcry ultimately forced Elizabeth's successor James I to revoke these grants of trade monopolies in 1610. In 1624, the Statute of Monopolies formally repealed the practice and henceforth restricted patent rights solely to new inventions.

viii Charles Anthon, "*A Classical Dictionary*," Harper & Bros, 1841.

Figure 1.7 Portrait depicting Queen Anne of Great Britain by John Closterman, circa 1702. (credit: Workshop of John Closterman via Wikimedia Commons / Public domain)

European countries made several other important innovations in their early patent systems. In the mid-1500s, France became the first to publish patent descriptions from inventors who chose to submit them. England under the reign of Queen Anne (1702–1714) was the first to require inventors to submit a written description of their patent to "describe and ascertain the nature of the invention and the manner in which it is to be performed." And in 1729, France began to publish abbreviated digests of patent descriptions, but these were intermittent and subject to delays of up to 60 years after the patents were originally granted. As might be expected, this lack of regularity limited the technological knowledge sharing that is one of the great benefits of a patent system.

Flaws of Early Patent Systems

Old World patent systems suffered from other major weaknesses as well. Patents for inventions imported from other countries were regularly granted, increasing the incentive for would-be patentees to copy the creative work of others rather than invent for themselves. And there was generally no systematic examination of patents by technical experts, in part because this was viewed as an intrusion upon the prerogatives of the Crown.

But the biggest problem with early patent systems was that they all shared a tendency to reinforce the wealth and prerogatives of elites, not the welfare and productive capacity of the whole of society. In Britain, patents were favors granted "by grace of the Crown" and were often only secured through court connections. They were also "subject to any restrictions the government cared to impose, including the expropriation of the patent without compensation."[ix]

What's more, patent application fees were prohibitively high—more than 11 times the per capita annual income of the average British citizen—which put the system out of reach of all but the wealthy. Yet ironically, in

ix Op. cit., Khan.

the parliamentary debates over the patent system, the exclusion of the "working classes" was regarded as one of the chief virtues of the British patent system.

British patent law also severely limited the ability of inventors to sell or license the rights to their discoveries, as noted in a contemporary 1832 book entitled *A Practical Treatise on the Law of Patents for Inventions*.[x] This restriction, along with "working requirements"—these were regulations that forced patentees to manufacture products based on their patents within two or three years of issuance or lose their patent rights—limited innovation activity mainly to those who had the factories (or the ready capital to build them) needed to produce such products.

These rules had two significant effects upon the British economy. They restricted innovation to only a small sector of the population rather than unleashing the creativity and productivity of the whole people. And they created a bias toward inventions that enhanced the market dominance of incumbent, capital-intensive industries rather than opening up new markets for the sorts of disruptive new industries that usually drive economic progress.

"European societies were organized in ways that concentrated power in the hands of elites and facilitated [parasitic] rent-seeking by favored producers," notes historian B. Zorina Khan. "The organization of invention was no exception. A society that restricts [invention] to elites can generate exceptional gains early on, but the initial spurt is unlikely to be maintained."

Indeed, the result in Britain was unbalanced and narrowly focused economic growth. Inventors faced high transaction and monetary costs, a limited market for their inventions, and a great deal of uncertainty. Diffusion of new technological knowledge was severely inhibited, and the rate of technological change was adversely affected as a result. Eventually, Britain's initial leadership of the Industrial Revolution had more to do with its large existing commercial holdings and manufacturing base, and its vast stores of amassed capital, than with systemic or broad-based encouragement of innovation within British society.

The Changing Tide

The elitist nature of early patent systems reflected the feudal economic relations that dominated that era. But by the late eighteenth century, capitalist economies were beginning to emerge across Europe, and in Britain, nationwide lobbies of manufacturers and patentees called for an overhaul of the patent system to bring it in line with this new economy. The needed reinvention would come not from Britain, however, nor even from France, which had its own democratic revolution soon after America's. Instead, it took place in the newly liberated United States, where a vibrant capitalism unburdened by centuries of entrenched feudalism was developing.

This, then, is the story of one of the most admired of all American inventions—the modern democratized patent system, now used widely throughout the world.

1.3 America's Uniquely Democratic Patent System

Learning Objectives

After completing this section, you will be able to

- Explain the role of the Founding Fathers in developing the U.S. patent system.
- Explain the six unique features of the U.S. patent system. Never mind that intellectual capital accounts

A Patent System For Everyone

Before reading this section, please watch [this overview video (https://openstax.org/l/PatentSystemForEveryone)](https://openstax.org/l/PatentSystemForEveryone) covering why America developed the world's first patent system for the common

x Richard. Godson, A Practical Treatise on the Law of Patents for Inventions and of Copyright, Saunders and Benning, 1832. Retrieved from Google books, at bit.ly/QmPhaZ

man, and what we got out of it as a result (hint: the strongest economy on the face of the earth).

Never mind that intellectual capital accounts for 55 percent of total U.S. GDP today.[xi] Or that it represents up to 80 percent of the market value of all public companies in the U.S.[xii] To most citizens today, patents and other intellectual property are inscrutable mysteries. But to America's Founding Fathers, they were matters of the highest national importance.

The Challenge Facing the Founders

The people who led the revolution and were later tasked with writing a Constitution were not concerned simply with creating lasting political structures that could defend the hard-won freedom and sovereignty of the newly liberated colonies. They also struggled to stimulate the rapid growth of industry to ensure the new nation's economic survival.

The survival of the United States of America was far from certain in those days. It was a backward agrarian economy, dependent on imports and lacking major domestic industry, with a population of barely three million inhabitants. Britain, meanwhile, with whom the United States had just fought a war and would soon fight another, had three times the U.S. population, boasted the most powerful economy on Earth, and was the unrivaled leader of the emerging Industrial Revolution.

Figure 1.8 Political cartoon circa 1780 titled "The English Lion Dismember'd or the Voice of the Public for an Enquiry into the Public Expenditure" (credit: modification of work by BPL via Wikimedia Commons / CC BY 2.0)

It was, therefore, a critical task of the leaders of the new American nation to design institutions—including a patent system—that would encourage economic activity and investments to spur the growth of America's primitive economy.

It's important to note that although the Founders deeply believed in democratic ideals of government, they were not wild-eyed idealists. They were very practical people who faced an overwhelming challenge: How do you build a national economy from scratch, one that can prosper without British imports? To do that, they needed to mobilize every asset they had.

xi Kevin A. Hassett and Robert J. Shapiro, "*What Ideas Are Worth: The Value of Intellectual Capital and Intangible Assets in the American Economy*," Sonecon, 2012.

xii "Intangible Asset Market Value," Ocean Tomo, derived from http://bit.ly/bAPJVH

Unlike Britain, however, America had no significant capital or commercial assets. In fact, the American standard of living at that time was actually lower than in many of their South American neighbors.[xiii] All America had was abundant, but still untapped, natural resources, and a population widely regarded in the world as uniquely enterprising and independent minded.

Ours was the world's fastest-growing population, doubling in size every 20 years. Americans were also widely literate (albeit mostly lacking in higher education) and informed by what Washington Irving called "the general diffusion of knowledge."

Most important, unlike the tenant farmers and laborers who made up the bulk of England's rigid class society, the vast majority of Americans were free-holding small farmers, merchants, shopkeepers, artisans, and mechanics—the forerunners of what we today call the middle class—who were possessed with what publisher Hezekiah Niles called "a universal ambition to go forward."

This was America's principal asset, their ace in the hole. And men such as George Washington, Thomas Jefferson, and James Madison knew they had to find a way to unleash the creative and productive potential of these independent citizens if the country was to industrialize and survive.

Incentives Needed to Spur Economic Growth

As Jefferson wrote to his daughter Martha in 1787, it was precisely because America was bereft of Europe's vast resources and left to its own devices that "we are obliged to invent and execute; to find means within ourselves, and not to lean on others."

But how to do that? From the historical record, it appears that the Founders quite consciously sought to construct a patent system that would do what no other patent system in the world had ever done before—namely, stimulate the inventive genius and entrepreneurial energy of the common man.

As noted earlier, the first thing they did was to affirm inventors' and authors' rights in the U.S.Constitution itself. Although the intellectual property clause was ultimately adopted by unanimous consent of the delegates on September 5, 1787, there had been some debate about the issue. Thomas Jefferson in particular had expressed reservations about the wisdom of granting "temporary monopolies" (i.e., patent rights), given that Americans had just waged a bloody war of independence to overthrow the British monopoly of trade and political power. But as other delegates noted, and Jefferson eventually came to realize, a monopoly of trade is a far cry from the temporary incentives granted to inventors in return for the benefits they provide society.

"How can the exclusive right of an invention be compared with a monopoly in trade?" D.P. Holloway, a Commissioner of Patents, would later argue in his 1863 annual report to Congress. "How can the exclusive privilege to sell salt in Elizabeth's time, which added not one bushel to the production, but which enriched the monopolist and robbed the community, and the exclusive right of Whitney to his cotton gin, which has added hundreds of millions [of dollars] to the products and exports of the country, be both branded, with equal justice, with the odious name of monopoly?"[xiv]

xiii Stanley Engerman and Kenneth Sokoloff, "*Factor Endowments, Institutions, and Differential Paths of Growth Among New World Economies*," in Stephen Haber (ed), How Latin America Fell Behind, Stanford University Press, Palo Alto, California, 1997.

xiv United States Patent Office, Annual Report of the Commissioner of Patents 1863. Retrieved from Google Books at http:// bit.ly/Meh0Pv

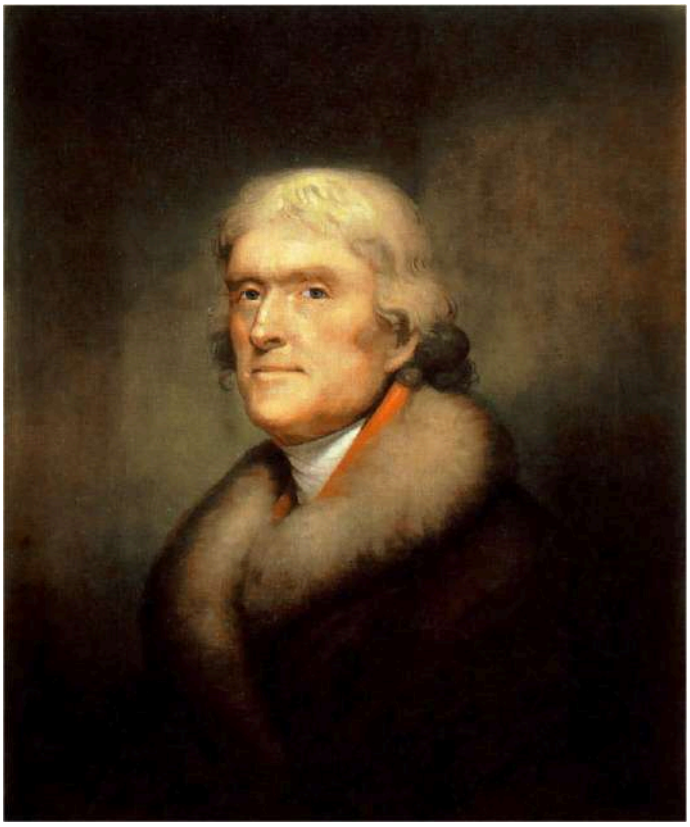

Figure 1.9 Portrait of Thomas Jefferson by Rembrandt Peale, circa 1805 (credit: Rembrandt Peale via Wikimedia Commons / Public domain)

In the words of Louis Wolowski, Chair of Industrial Economics at the Conservatoire des Arts et Métiers: "[Inventors'] rights under patents, are called 'monopolies' only from the poverty of language, which has failed to express in words a distinction which no less clearly exists."

The Founders understood this distinction clearly. "Rather than monopolists," says historian Khan, "patentees were viewed as beneficent contributors to progress, and the consistent goal of those who shaped the system was to encourage domestic ingenuity, whatever the social class of the inventor."[xv]

Or as James Madison put it in Federalist Paper 43, "The public good fully coincides with the [patent rights] of individuals."

Creating a New Type of Patent System

The real genius of the Founders, however, lay in the way they consciously integrated democratic principles into the design of the world's first modern patent system—principles that had a profound impact on the pace and direction of U.S. economic growth. These were reflected in six fundamental innovations in our patent system that departed from European practice.

Low Fees: Making Patents Affordable

The original patent law passed by Congress on April 10, 1790, deliberately set patent fees to a level any ordinary citizen could afford—initially $3.70, but three years later raised to $30. This was still less than 5 percent of the rate in Britain. Patent fees remained $30 for the next 70 years, ensuring that virtually any citizen could participate in the Industrial Revolution.

The results were dramatic. Whereas most of Britain's handful of inventors came from privilege, the vast

xv Opt. cit., Khan.

majority of America's thousands of inventors came from humble beginnings. They included farmers, factory workers, merchants, mechanics, and other artisans.

Of the 160 so-called "great inventors" of nineteenth-century America, over 70 percent had only a primary or secondary school education. Many had no formal schooling at all. And some of the most famous names in American invention—Matthias Baldwin (locomotive), George Eastman (roll film), Elias Howe (sewing machine), and Thomas Edison (electric light and phonograph)—had to leave school early to support their families.

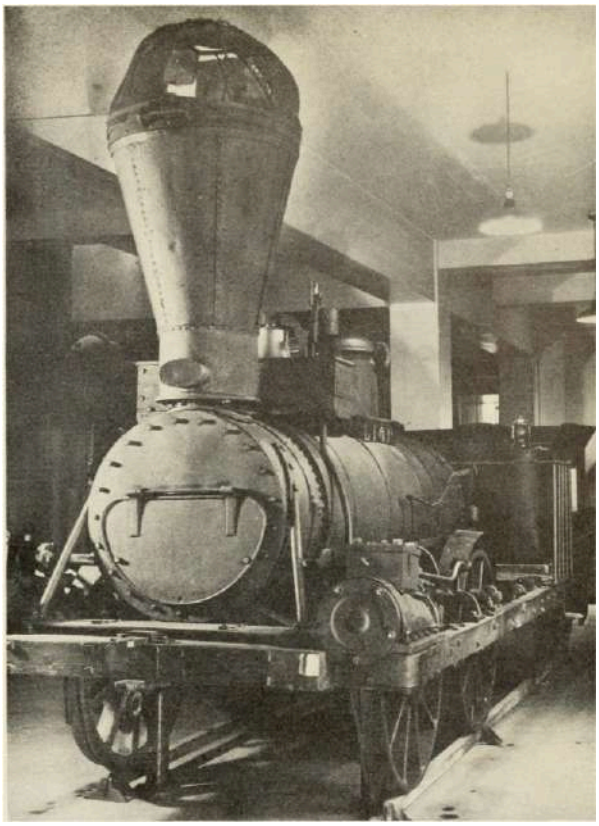

Figure 1.10 One of Matthias Baldwin's early locomotives, the Memnon. (credit: Internet Archive Book Images via Wikimedia Commons / No restrictions)

What's more, in another sign of economic democratization, most U.S. inventors had no formal scientific or technical training. They had only the general knowledge common to citizens of the day, plus whatever they taught themselves. What distinguished them was their ingenuity in applying that general knowledge to the practical problems of daily existence, and then exploiting the commercial opportunities that arose as a result. In short, they were entrepreneurial.

The rapid growth of inventive activity during early American industrialization was characterized by a disproportionate increase in the involvement of segments of the population with relatively common sets of skills and knowledge," note Sokoloff and Khan. "Rather than being accounted for by an elite who possessed rare technical knowledge or commanded large amounts of financial resources, the rise in patenting coincided with a broadening of the ranks of patentees to encompass many individuals, occupations, and geographic districts."[xvi]

Making the patent system inexpensive invited everyone's participation. In the words of Englishman John Standfield, quoted in an 1880 issue of *Scientific American*, "The cheap patent law of the United States has been and still is the secret of the great success of that country."

xvi Kenneth Sokoloff and B. Zorina Khan, "*The Democratization of Invention During Early Industrialization, 1790O1846*," Working Paper No. 578, Department of Economics, University of California, Los Angeles, December, 1989.

Simplifying Application Procedures

The Founders greatly simplified administrative procedures in applying for a patent. This was no small thing when you consider that British applicants were forced to seek approval from seven different offices, and then twice—twice!—obtain the signature of the King. If they wanted a patent that covered Scotland and Ireland as well, they needed approval from ten more offices. British patent procedures were so Byzantine, in fact, that author Charles Dickens wrote a spoof of them entitled *A Poor Man's Tale of a Patent*, in which his main character, an inventor, is forced to seek approvals from 34 offices, some of which had been abolished years before and no longer existed. Obviously, few inventors could hope to run this gauntlet successfully unless they had the wherewithal to hire very expensive patent agents to assist them.

In the United States, on the other hand, applications only needed the approval of a single patent office, which created repositories throughout the country where inventors could drop off their applications and models and have them forwarded to the patent office at government expense. Rural inventors could even apply for a patent through the mail—postage free!

This last perk for rural inventors turned out to have a big impact on the course of U.S. economic development. While most British industrial breakthroughs were confined to London or other big cities, U.S. inventions were widely distributed across the country, in urban and rural areas both. The result was broader- based economic growth and less income inequality in the United States.

Spreading New Technological Knowledge

Another unique feature of the U.S. patent system was its systematic effort to spread new technological knowledge throughout society, thereby creating a virtuous circle of innovation begetting more innovation. In Britain, patents were only open to public inspection after paying a fee, and until 1852 were not even officially printed, published, or indexed. In France, printed information about patents was limited to brief titles in patent indexes, intermittently published and only available in the office in which these had been originally filed.

By contrast, the first U.S. patent law explicitly stated that "copies of patent Specification together with similar Models [are] to be made at the public Expence and lodged in each state."[xvii] In addition, as noted in the previous section, a plethora of publications by government and industry enabled any citizen with an interest to keep abreast of the latest patented technologies.

Examining Patents for Validity

In a very crucial departure from Old World practice, the Founders created the world's first examination system for patents to ensure their **novelty**, **non-obviousness**, and **utility**. The examinations were initially conducted by a committee composed of the Secretary of State (Thomas Jefferson), Secretary of War (Henry Knox), and Attorney General (Edmund Randolph). But this was found to be cumbersome, so in 1793 a simple registration system was established. It turned out, however, that without the examination of applications for novelty, non-obviousness, and utility, the validity of issued patents began to be questioned. So the reforms of the 1836 Patent Act (https://www.openstax.org/l/1836PatentAct) specified that henceforth applications would be scrutinized by technically trained examiners to ensure that the invention represented a genuine advance in the state of the art.

For the first time anywhere in the world, the criteria for granting a patent depended solely upon the merits of the application rather than the identity or the mere say-so of the inventor.

The situation was very different in Europe. In France, the following caveat was printed on each patent: "The government, in granting a patent without prior examination, does not in any manner guarantee either the priority, merit or success of an invention." Imagine trying to interest a group of investors in your new invention with that kind of warning label attached to it!

xvii Patent Act of 1790, HR-41,

In Britain, meanwhile, the lack of any examination of patent validity made the purchase of a patent right highly speculative and costly, thereby limiting investment in new technology.

By contrast, says Khan, "the U.S. examination system reduced uncertainty about the validity of patents, and provided [interested parties] with a signal of [their] potential value." This proved to be crucial in facilitating the growth of an extensive market in the sale and licensing of valuable patent rights—the first large-scale market of this type in the world.

No "Working Requirements" Reduced Monopoly Control

The fifth distinguishing feature of the U.S. patent system was the lack of any sort of "**working requirements**." In the debate over HR-41, the bill that became the first U.S. patent law in 1790, "the Senate suggested requiring patentees to make products based on the patent or license others to do so. But the House rejected this as an infringement of patentees' rights."[xviii]

Indeed, the Founders believed working requirements would only strengthen monopoly power and skew invention toward incumbent industry by limiting patents to those with the factories (or the capital to build them) needed to manufacture products from their inventions. [xix]

In short, the Founding Fathers of this nation deliberately and quite consciously created what we now call "**non-practicing entities**" (NPEs) in order to expand the pool of inventors in their then backward economy to include ordinary citizens without the wealth or resources to commercialize their own inventions. And it worked, leading to a dramatic surge in innovation in nineteenth-century America as large numbers of ordinary citizens started inventing and then licensing their discoveries to enterprises for commercialization.

By 1865, the U.S. per capita patenting rate was more than triple that of Britain's, according to the annual reports from the commissioners of patents in both countries, and by 1885, it was more than quadruple that of Britain. Each U.S. patentee was also far more prolific than their British counterpart, so by mid-century, the United States was patenting five times the number of inventions as Britain each year, even though the populations were then equal in size.

Creating a Market for New Technology

The sixth unique feature of the U.S. patent system—and along with the refusal to impose working requirements, the one that had the greatest impact on future U.S. economic growth—was "an explicit provision for the sale of patent rights [that] both the courts and the U.S. Patent Office acted to facilitate."[xx]

Why facilitate the buying and selling of patents? Because doing so enabled ordinary worker or farmer inventors without the capital to commercialize their own discoveries to still participate in inventive activity and earn income by licensing or selling their patents to enterprises that could. This ability to license patent rights (along with the low application fees) turned inventing into a new career path for thousands of poor but technically creative citizens.[xxi] It also proved to be a powerful means of mobilizing capital for investment in new technologies and their commercialization into new products and services for society.

That patents could be used as tradable assets by non-practicing entities without the wealth to commercialize their own discoveries was a wholly unique feature of the American patent system. By 1880, 85 percent of all U.S. patents were licensed by their inventors, compared with 30 percent of British patents.[xxii]

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xviii Op. cit., Khan.

xix B. Zorina Khan, "*Antitrust and Innovation Before the Sherman Act*," Antitrust Law Journal, No. 3, 2011.

xx Naomi R. Lamoreaux and Kenneth L. Sokoloff, "*Inventive Activity and the Market for Technology in the United States: 1840O1920*," Working Paper 7107, National Bureau of Economic Research, Cambridge, Mass. 1999.

xxi B. Zorina Khan, "*Institutions and Technological Innovation During Early Economic Growth: Evidence From the Great Inventors of the United States, 1790-1930*," Working Paper 10966, National Bureau of Economic Research, Cambridge, Mass., 2004.

Patent licensing, in fact, was the principal means by which new discoveries were commercialized in the decades before the early twentieth- century emergence of in-house corporate R&D departments. Publications such as *Scientific American* were founded specifically to facilitate the trade in patents, and it regularly featured lists of new and interesting patents, which commercial enterprises then licensed or purchased to use in their product development efforts.

American Bell Telephone's new product pipeline, for example, operated like most others at the time. According to its 1894 annual report, the company's R&D department licensed 73 patents from outside inventors, while developing only 12 from its own employees.

Thomas Blanchard was a typical inventor-licensor. He was the son of a small farmer who invented and patented a mechanical tack-maker in 1806 that could fabricate five hundred tacks per minute, each superior to tacks made by hand. He sold the rights to his machine for $5,000, quite a sum in those days. He then invented a lathe to produce uniform gun stocks, and the patent he received for it enabled him to attract investors for the production of those gun stocks for the local Boston market. Blanchard also leased his patent rights to gun producers nationwide, as well as to manufacturers of tool handles and wheel spokes. The income he generated from patent licensing enabled him to make inventing his full-time career. He went on to invent a wood-bending machine, an upriver steamboat, and a steam wagon that was used until the introduction of railroads in the United States, and received a total of 25 patents during his career.

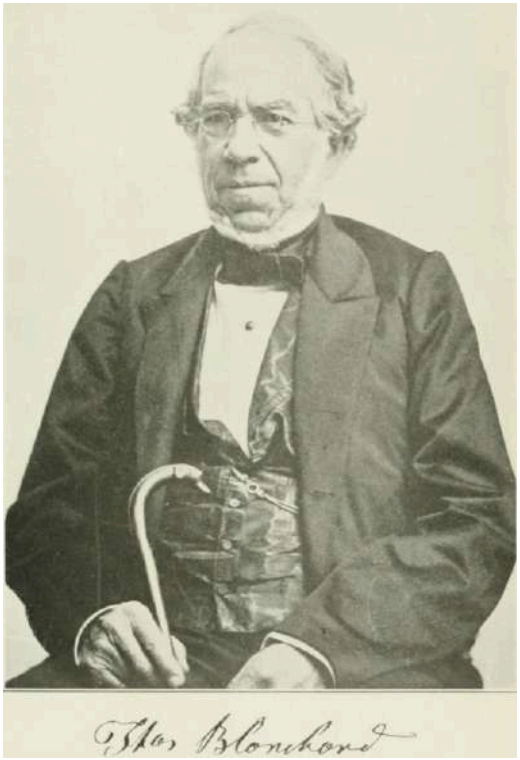

Figure 1.11 Portrait of Thomas Blanchard, circa 1912 (credit: modification of work by George Iles via Wikimedia Commons / Public domain)

According to a 2013 Congressionally mandated Government Accountability Office (GAO) report on NPEs, "History is filled with examples of successful inventors who did not develop products based on the technologies they patented." It specifically cited the case of Elias Howe, who patented a method of making a lockstitch but did not produce sewing machines. Instead, Howe licensed his patents to the Singer Company, which then deployed Howe's invention in its sewing machines.[xxiii]

xxii B.Zorina Khan, *The Democratization of Invention Patents and Copyrights in American Economic Development, 1790-1920,* Cambridge University Press, 2005.

Patent licensing, scholars have found, was facilitated by an array of intermediaries—lawyers, venture financiers, and patent licensing agents—who "lowered the transaction costs and improved the efficiency" of the trade in and commercialization of patented technology. "By enabling, indeed encouraging, inventors to focus on what they did best [i.e., invention], this division of labor gave rise to the most technologically fertile period in American history."[xxiv]

The Positive Effects of Licensing

The Founders' decision to foster NPEs and patent licensing proved crucial to America's rapid technological progress and economic growth. Indeed, patent records from the nineteenth century reveal that more than two-thirds of the "great inventors" of the Industrial Revolution, including Thomas Edison and Elias Howe, were NPEs who specialized in invention and licensed some or all of their patents to outside enterprises for development into new products.[xxv]

Had the United States followed the approach of older European patent systems and limited patent rights solely to inventors who made or sold products—or prevented them from licensing their patents—America might not have even had an Industrial Revolution.

In any event, the result of this division of labor between invention and production was exactly as Adam Smith predicted:

> "The growth of market trade in patents raised the returns to invention and encouraged a division of labor whereby technologically-creative individuals increasingly specialized in their comparative advantage—invention," noted Lamoreaux and Sokoloff. "It was the expanded opportunities to trade in patented technologies that enabled the independent inventors of this golden age to flourish—and that stimulated the growth of inventive activity generally."

The benefits of that division of labor remain visible today, embodied in the thousands of university and other NPE patents licensed by companies large and small each year, as well as by the positive U.S. balance of trade in patent licensing, estimated to be worth at least $150 billion annually as of 2006. More than 5,000 new products and 7,000 new companies have been created with the help of university NPE patents alone in the last 30 years.[xxvi] And licensors of patented technology help the United States maintain its technology leadership in critical economic sectors.

A New Species called "Patent Trolls"

To be sure, there is new a species of NPE known as "patent trolls" who use low-quality patents to extort so-called "license fees" from small businesses unable to pay the cost of standing up to them in court. But their activities have nothing in common with real patent licensing.

Typically, these patent owners send form letters to hundreds, or in some cases thousands, of random small businesses, claiming with little or no evidence that they are "infringing" their patents. These letters then demand so-called "licensing fees" ranging from one to several thousands of dollars to avoid a patent infringement lawsuit that could cost those businesses far more to defend against in court—even if the business owner is innocent of any infringement.

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xxiii "*Intellectual Property: Assessing Factors that Affect Patent Infringement Litigation Could Improve Patent Quality*," U.S. GAO, August 2013.

xxiv Naomi Lamoreayx and Kenneth Sokoloff, "*Intermediaries in the U.S. Market for Technology, 1870-1920*," Working Paper No. 9017, National Bureau of Economic Research, Cambridge, MA. June, 2002.

xxv B.Zorina Khan and Kenneth L.Sokoloff, "*Intellectual Property Institutions in the United States: Early Development and Comparative Perspective*," World Bank Research Workshop, July 17-19, 2000

xxvi Joseph Hornett and David Johnson, Purdue Research Foundation. Derived from: bit.ly/O7iA18

Beginning in mid-2013, a torrent of bad faith demand letters began targeting small businesses, sparking wide protest. The National Federation of Independent Businesses (NFIB) and many other business groups and trade associations demanded action, and Washington responded in 2014 with several pieces of proposed reform legislation. By early 2015, the Federal Trade Commission (FTC) had acted against one sender of bad faith demand letters, and federal legislation to rein in such abuses seemed likely to pass.

At the state level, meanwhile, by early 2015, 15 states had enacted laws to curb abusive patent demand letters, and 11 others were actively considering similar bills. In addition, the attorneys general of several states have used consumer protection laws against making false claims to force these "patent trolls" to stop sending their extortionist demand letters.

These abusive patent litigants should not be confused with legitimate NPEs, however, whose primary business is invention and technology licensing, not extorting so-called "license fees" from innocent businesses. Patent licensing facilitates the transfer and commercialization of technology into new products and services and promotes U.S. economic growth.

A Patent System for Everyone

In sum, these six unique features of the U.S. patent system—low fees, simplified procedures, examination of applications by trained experts, systematic disclosure of new technological knowledge, lack of "working requirements," and encouragement of robust trade in patent rights—all had a powerfully beneficial impact on the nation's economic growth.

But none of that would have been possible were it not for the broad-based democratic rule of law in the United States and the critical role played by the U.S. legal system in interpreting and enforcing America's revolutionary patent laws.

1.4 The Role of the U.S. Legal System

Learning Objectives

After completing this section, you will be able to

- Describe the differences between U.S. and European patent laws.
- Describe the history of patent litigation in the United States.

U.S. Patent Law vs. European Patent Law

Just as with any other property right, patent rights would be meaningless without the ability to enforce them in court. And from the earliest days of the patent system, says Khan, "Our legal system remained true to the Constitution in the belief that the defense of rights in patented invention was important in fostering industrial and economic development."

In Britain and other European countries, patents were viewed as "pernicious monopolies that restricted community rights and [Had] to be carefully monitored and narrowly construed."[xxvii] The enforcement and interpretation of patent laws by the courts in Europe also tended to be highly variable and dependent upon the whims of each individual judge.

In the United States, however, early courts treated inventors' patent rights with deference, just as they did the rights of other property owners. Famed Supreme Court Justice Joseph Story repeatedly declared that patent rights were "sacred" and were the just reward for inventive ingenuity. As he noted in *Lowell v. Lewis* (https://openstax.org/l/Lowell_v_Lewis) (1817), "the proper duty of the court" is to ensure that "wrongdoers may not reap the fruits of the labor and genius of other men."

The relative uniformity and certainty of enforcement of patent rights by the courts also proved critical in

xxvii B.Zorina Khan, *The Democratization of Invention: Patents and Copyrights in American Economic Development, 1790-1920*, Cambridge University Press, 2005.

encouraging capital to invest in commercializing those patent rights.

Contrasting the patent laws and policies of the United States and Britain, Supreme Court Justice Henry Baldwin went to some lengths in *Whitney v. Emmett* (https://openstax.org/l/Whitney_v_Emmett) (1831) to show how English courts saw patents as a zero-sum trade-off between private rights and the public good. The explicit intention of U.S. patent law, however, was "to benefit the inventor, in the belief that maximizing individual welfare leads to maximum social welfare."

Nonetheless, U.S. intellectual property laws did try to strike a balance between the needs of the many and the few. "Patent laws ensured the security of private property rights in invention. However, it was also necessary to balance the just claims of inventors against the dangers of exclusive monopolies that might restrict the scope of current and future invention."[xxviii]

Changes in U.S. Patent Law Through the Years

Over the years, of course, that balance has moved back and forth between relatively stronger versus weaker enforcement of patent rights. With the rise of the robber barons in the late nineteenth century, government and the courts increasingly viewed patents through the prism of antitrust, in some cases even compelling large firms like IBM to license their patents to competitors. Then with the advent of the high-tech revolution in the 1980s, antitrust concerns faded and the courts began once again to view stronger patent rights as helpful in fostering innovation.

Interestingly, the U.S. legal system has always operated on the theory that the best way to achieve the proper balance between private rights and public interest was not through government decree, centralized management, or compulsory licensing but rather through the decentralized decision making and market interactions of inventors themselves. The court's role was to resolve the inevitable conflicts that arose, on a case by case basis.

Throughout all the twists and turns in patent enforcement over the centuries, however, the federal courts have remained unwavering on four key principles of U.S. patent law.

An "Explosion" of Patent Litigation?

Patent litigation, of course, has always been an integral feature of the U.S. patent system. The first patent case on record was that of Benjamin Folger, whose patent for the production of candles was invalidated by the district federal court for New York in 1792. This was merely the first of many hundreds (and eventually thousands) of cases in which patent litigation served the important function of settling either the validity or the disputed ownership of the rights to critical new technologies—the litigation between telephone inventors Alexander Graham Bell and Elisha Gray being perhaps the most famous case in point. By doing so, the courts provided greater certainty regarding the value of such rights to entrepreneurs and investors alike.

Today, some critics contend that an "explosion of patent litigation" unlike any in history is harming business and diverting resources better spent on innovation. No responsible observer would deny that the courts have seen an increase in patent infringement suits in recent years, just as they have seen a rise in personal injury claims and product liability suits. But that said, the evidence shows that the rate of patent litigation today is actually below historical norms.

According to USCourts.gov (https://www.USCourts.gov) figures, the number of patent infringement suits filed in the United States increased 59 percent between 2001 and 2011—from 2,520 cases in 2001 to 4,015 cases in 2011. Meanwhile, the number of patents granted in that same period increased by only 35 percent, which supports the view that patent litigation has become more frequent over the last decade as the role and value of intellectual property has increased in the Knowledge Economy.

xxviii Op. cit., Khan.

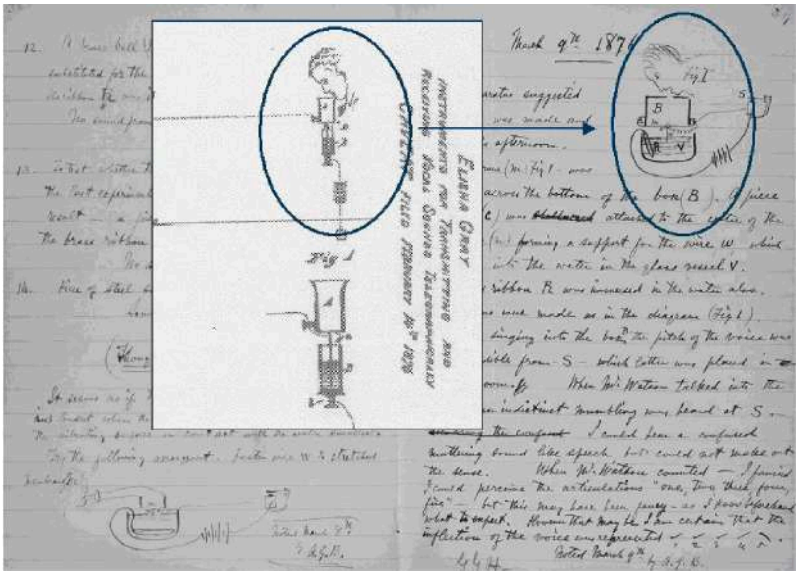

Figure 1.12 A comparison of the illustration of the telephone in Alexander Graham Bell's diaries and Elisha Gray's patent application. (credit: modification of work by Elisha Gray and Alexander Graham Bell via Wikimedia Commons / Public domain)

Statistics from USCourts.gov (https://www.USCourts.gov) show an even sharper rise in the number of patent suits filed in 2012, to 5,189 cases. But analysts attribute most of this increase to the anti-joinder provisions of the Patent Act of 2011, which curtailed the practice of naming multiple defendants in a single infringement suit. According to Carla Rydholm of the patent analytics firm Lex Machina, "Plaintiffs must [now] meet more stringent requirements to file a case against multiple defendants. So instead of Plaintiff X filing one case naming 20 defendants, Plaintiff X might file 20 lawsuits (one per defendant) each with unique civil action numbers."

When looked at over the longer term, however, it turns out that 96 percent of all the increase in patent infringement suits since 1991 can be explained by a corresponding increase in patents granted, reports the PricewaterhouseCoopers's 2013 Patent Litigation Study.[xxix]

In case you're wondering if the increase in patents granted is itself a sign of a patent system being increasingly gamed by speculators wanting to cash in on the new "patent gold rush," note that the average number of patents issued per billion dollars of GDP has remained at or below the same level—13 patents per billion dollars of GDP—since 1963.[xxx]

Interestingly, although the number of suits filed has increased in rough correlation to patent grants, the number that actually go to trial has remained fairly constant over the last 30 years. About 90 percent of the suits filed each year are abandoned or settled. Of the three hundred that remain, two-thirds never go to trial, and are adjudicated on summary judgment (of noninfringement in most cases).

The nation is thus left with, at most, between 90 and 112 patent infringement trials per year—exactly the same number that went to trial 10, 20, and even 30 years ago.[xxxi]

To be sure, there can be significant costs to business even in litigating and settling patent suits that never go to trial. But no one has shown that the relative cost of patent litigation today is higher than it was historically, or that the cost of patent litigation is more burdensome than other customary legal costs in business,

xxix Http://www.pwc.com/en_US/us/forensic-services/publications/assets/2012-patent- litigation-study.pdf

xxx Sean Connolly, "Patent Litigation Rates: What They Tell Us and What They Don't," derived from: http://connollyip.com/patent-litigation-rates-what-they-tell-us-and-what-they-dont/

xxxi Gene Quinn, "Patent Litigation Statistics: 1980- 2010, *IP Watchdog*, derived from: http://www.ipwatchdog.com/2011/08/02/patent-litigation-statistics-1980-2010/id=17995/

especially the huge cost of regulatory compliance.

The evidence does not suggest that patent litigation is "out of control" today. As retired Chief Judge Paul Michel of the U.S. Court of Appeals for the Federal Circuit, the main court for patent appeals since 1982, notes, "The level of patent litigation today is rather modest for a nation with two million active patents and hundreds of thousands of businesses competing against each other."

History supports Judge Michel on this point. The estimated 124-plus smartphone patent suits filed between 2009 and 2012[xxxii] are less than one- quarter the number of patent suits filed during the first "Telephone Wars" of Alexander Graham Bell's time. Back then, the American Bell Telephone Company and its successor, AT&T, litigated 587 patent cases alone.[xxxiii]

Even more surprising, given the common belief in a patent litigation "explosion" today, patent and legal records from the golden age of invention during the mid-nineteenth century U.S. Industrial Revolution show that the patent litigation rate at that time—defined as the number of patent suits filed in a decade divided by the number of patents issued in that decade—reached 3.6 percent.[xxxiv]

In contrast, USCourts.gov (https://www.USCourts.gov) figures show the patent litigation rate during the decade 2001 to 2011 was less than half that—only 1.52 percent. From 2002 to 2012, reflecting the increased suits but also the increased (276,788) patents issued, the litigation rate was 1.57 percent.

Over the entire period from 1790 to 1860, the patent litigation rate averaged 1.65 percent.

Today's smartphone wars, then, are simply "back to the future" when it comes to the ways in which disruptive new industries are developed. Historians have noted that every major industrial breakthrough of the last 150 years—from the development of the sewing machine, telephone, automobile, radio, aircraft, medical stent, and even disposable diaper industries, to the birth of the semiconductor and Internet e-commerce industries—witnessed exactly the same surge in patenting and patent litigation that we see in today's smartphone field.[xxxv]

And just as with smartphones today, the most competitive technology arenas have always been the most litigious. In Edison's time, the inventors of electrical discoveries were four times more likely than other inventors to be involved in patent litigation, and accounted for 41 percent of all patent suits filed during that period.[xxxvi]

In any event, by early 2015, it had already become clear that a noticeable decline in patent litigation was under way. Most analysts attributed the decline to a series of U.S. Supreme Court rulings in 2014 limiting the patentability of software and increasing the ability of the courts to impose sanctions on abusive litigants, which will be discussed later in this chapter. Also driving this decline in litigation was the availability of new post-grant review proceedings under the new America Invents Act, which allow third parties to challenge patents and, if the evidence so warrants, have their claims invalidated by the USPTO's Patent Trial and Appeal Board.

Although patent litigation is costly, the historical record suggests that it serves a vital function by settling the validity and disputed ownership of patent rights so these can be commercialized into new products, new

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xxxii http://en.wikipedia.org/wiki/Smartphone_wars.

xxxiii "The Telephone Cases," Wikipedia, http://en.wikipedia.org/wiki/The_T elephone_Cases.

xxxiv B. Zorina Khan, "*Property Rights and Patent Litigation in Early Nineteenth-Century America*," Journal of Economic History, 1995, vol. 55, issue 01, pages 58-97.

xxxv Adam Mossoff, "The Rise and Fall of the First American Patent Thicket: The Sewing Machine War of the 1850s, "*Arizona Law Review*, Vol. 53, pp.165-211,2011.

xxxvi B.Zorina Khan,*The Democratization of Invention: Patents and Copyrights in American Economic Development, 1790-1920,* Cambridge University Press, 2005.

services, and new medical treatments.

This is, in fact, the proper role of the courts.

1.5 What the U.S. Patent System Wrought

Learning Objectives

After completing this section, you will be able to

- Explain the effects of the U.S. patent system on American economic development.
- Describe trends in U.S. patenting over the years.

Creating the World's Most Successful Economy

In 1630, the puritan John Winthrop, future governor of Massachusetts colony, declared that "We shall be as a city upon a hill, the eyes of all people are upon us."

One hundred and fifty years later, the Founders of the United States of America proved Winthrop right, offering the world a vision of liberty and democratic governance that continues to inspire people to this day. As noted previously, the men who led the Revolution and wrote the Constitution were not wild-eyed revolutionaries. They were eminently practical people who managed to create the longest- living modern democratic political and economic system on the planet.

In other words, they must have done something right. And one of those things was surely the patent system they created. Because almost from the moment of its inception, it began to spark innovation and economic growth on a scope and scale never before seen in the world.

Only two months after America's first patent law was signed in 1790, in fact, Thomas Jefferson himself noted that it had "given a spring to invention beyond my conception." Within 13 years, America surpassed Britain—until then, the unrivaled leader of the industrial revolution—in the number of new inventions patented, even though Britain still had more than twice America's population. By 1870, as noted earlier, the United States was patenting more than five times the number of inventions as Britain, although their populations were by then roughly equal in size.

At first, most British observers were dismissive of American innovation efforts, declaring that the former colony would never be able to progress beyond the simple imitation of superior European technologies. But eventually Britain and other nations took note of the way the U.S. patent system seemed to be stimulating invention and economic growth at an unheard-of pace.

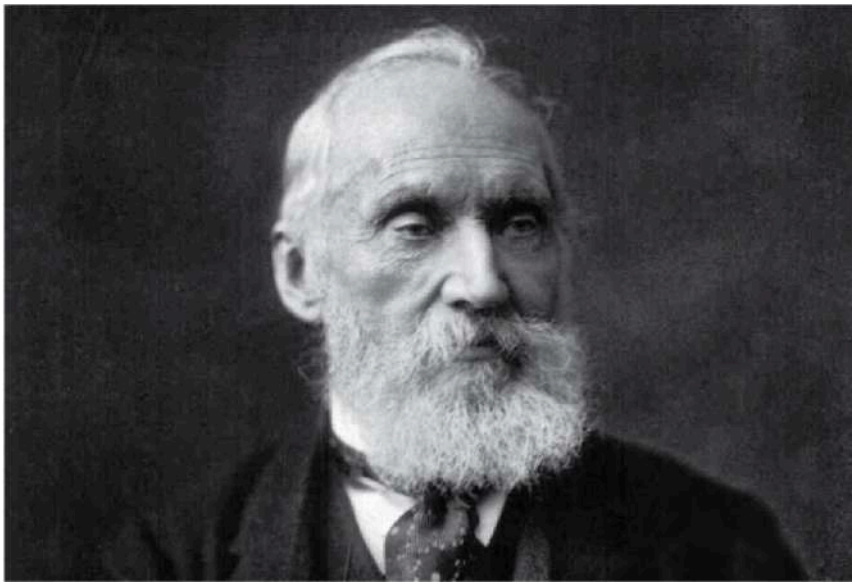

Figure 1.13 Photograph of William Thompson, Lord Kelvin. (credit: modification of "Photo by Messrs. Dickinson, London, New Bond Street" (according to http://www.sil.si.edu/DigitalCollections/hst/scientific-identity/fullsize/SIL14-T002-07a.jpg) via Wikimedia Commons / Public domain)

Sir William Thompson (pictured above), a British inventor and scientist attending the 1876 Centennial Exhibition in Philadelphia, looked at the amazing array of American inventions—including Bell's telephone, the Westinghouse airbrake, Singer's sewing machines, and Edison's improved telegraph—and had this to say: "If Europe does not amend its patent laws, America will speedily become the nursery of useful inventions for the world."[xxxvii]

Meanwhile, the Swiss Commissioner in attendance, the shoe manufacturer Edward Bally, offered a similar warning to his Old World countrymen: "American industry has taken a lead which in a few years may cause Europe to feel its consequences in a very marked degree."

Then, there's Japan's Assistant Secretary of State Korekiyo Takahashi, who visited the U.S. Patent Office. Upon his return home, he said, "What is it that makes the United States such a great nation? We investigated, and we found it was patents. And we will have patents."

Even the British jurist Sir Henry Sumner Maine, who had once argued that "the establishment of the masses in power is the blackest omen" for the future of invention, later changed his tune. He conceded that the U.S. patent system was "one of the provisions of the Constitution that have most influenced the destinies of the American people" and that it had made the United States "the first in the world for the number and ingenuity of [its] inventors".[xxxviii]

As historians Lamoreaux and Sokoloff noted, "[Foreign] observers attributed much of the country's rapid technological progress to its distinctive patent system. Quite revolutionary in design at inception, the U.S. patent system came to be much admired for providing broad access to property rights in new technological knowledge and for facilitating trade in patented technologies. These features attracted the technologically creative, even those who lacked the capital to directly exploit [i.e., commercialize] their inventions . . . and also fostered a division of labor between the conduct of inventive activity and the application of technical discoveries to actual production. It is no coincidence that Britain and many other European countries [later] began to modify their patent institutions to make them more like those of the Americans."[xxxix]

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xxxvii *Scientific American*, October 21, 1876, courtesy of B. Zorina Khan.

xxxviii Henry Sumner Maine, *Popular Government*, courtesy of B. Zorina Khan.

xxxix Naomi R. Lamoreaux and Kenneth L. Sokoloff, "*Financing Innovation in the United States: 1870 to Present*," MIT Press,

Every Breakthrough Spurs Patenting Spikes

The patent system's central role in fostering innovation can be seen in the patenting spikes that occur with every major industrial breakthrough. A major surge in patenting took place in the 1880s, for example, when the number of new patents issued each year jumped 56 percent to about 20,000, compared with the 12,000 issued yearly during the previous decade. This patent boom corresponded with rapid advances in the emerging railroad, telegraph, telephone, and electric light and power industries that signaled the industrialization of the U.S. economy.

The next sharp surge in patent issuances began around 1902 and lasted until 1916 or so, when the number of patents granted doubled from 20,000 per year to around 40,000 per year. This was the period of the newborn automobile and aircraft industries' most rapid early-stage growth. Patenting levels then remained relatively stable at about 40,000 per year until around 1960 or so, when the revolution in plastics and other synthetic materials along with boom-time growth in the aerospace and computer industries pushed patenting levels to 60,000 per year. There they remained until the mid- 1980s, when the personal computer and emerging high-tech industries of Silicon Valley began to power the whole of the U.S. economy and propel us toward the age of the Internet. Patenting levels then rose to around 80,000 to 100,000 yearly

With the rise of the Internet, social media, mobile telephony, and smartphones over the last two decades, the number of patent applications filed each year with the U.S. Patent and Trademark Office (USPTO) has surged fourfold. In 2014, the USPTO received 578,802 applications, finding 300,678 of these applications worthy of receiving a patent. This is but the latest spike in innovation and patenting.

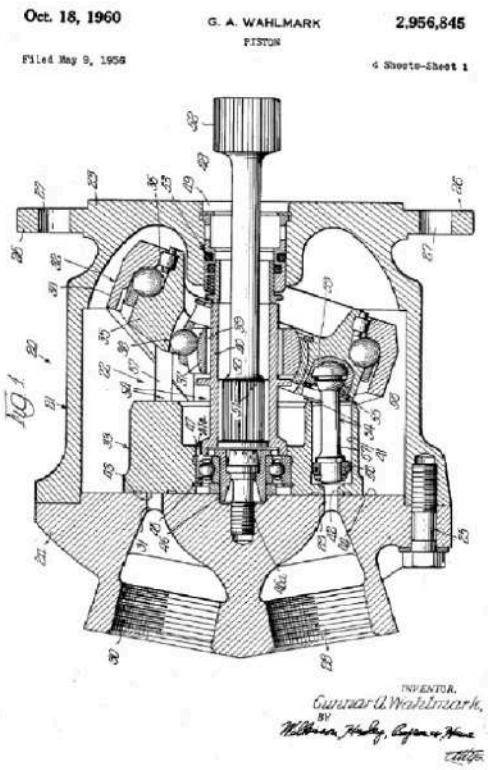

Figure 1.14 USPTO Patent No. 2956845 for an axial piston pump. (credit: modification of work by Gunnar A. Wahlmark, Rockford, Illinois USA. via Wikimedia Commons / Public domain)

Cambridge, Mass. 2007.

Clearly, whenever the United States has undergone a major industrial renaissance during which technology advances lead not only to the birth of new industries, but also to the reshaping of existing ones, patenting levels rise dramatically. It is no surprise, therefore, that Silicon Valley, midwife of many of the new Knowledge Economy industries of the past 60 years, is home to less than 1 percent of the nation's population but earns 12 percent of its patents each year. The Valley is now the site of a new USPTO satellite office serving high-tech innovators there.[xl]

The patent system has also been crucial in facilitating the growth of new start-up businesses, with 67 percent of entrepreneurs reporting that they find patents valuable in obtaining venture financing.[xli] This is important because although large companies contribute enormously to American innovation and industrial growth through their in-house research and development operations as well as via their partnerships with research universities, start-up companies play a particularly strong role in the creation of entirely new industries. Indeed, virtually every innovative new industry of the last 150 years—From the telegraph, telephone, and electric power industries of the 1800s, to the auto, aircraft, materials, and aerospace industries of the twentieth century, to the semiconductor, personal computer, software, biotech and Internet e-commerce industries of the last 60 years—was launched by an entrepreneurial start-up company.

The Founders would not be surprised by this. They created the world's first democratized patent system, after all, for a reason: to stimulate the ingenuity of the common man. They had asked themselves a question—the same question reiterated two generations later by Supreme Court Justice Joseph Story when he spoke before an audience of ordinary mechanics: "Ask yourselves, what would be the result of one hundred thousand minds ... urged on by the daily motives of interest, to acquire new skill, or invent new improvements."[xlii]

The result was the most successful economy on the face of the earth.

Patents and the American Dream

It's not only the economy that the patent system helped shape, but the culture and consciousness as well. As the eminent historian Gordon S. Wood observed in his 2010 book *Empire of Liberty*,

> "By the early nineteenth century, technology and prosperity were assuming for Americans the same sublime and moral significance that the enlightenment had reserved for the classical state and the Newtonian universe. Eli Whitney, inventor of the cotton gin, and Robert Fulton, creator of the steamboat, became national heroes."

And for the first time in human history, a nation had come to see its greatness not in empire or military might or royal lineage, but in its capacity for technological progress.

There was nothing preordained about America's economic success, no special "Yankee ingenuity" gene in their hereditary stock. As *Scientific American* noted in 1876, the United States advanced "not because we are by nature more inventive than other men. Every nationality becomes inventive the moment it comes under our laws."

Rather, the secret of America's success was a uniquely democratic patent system that "added the fuel of interest to the fire of genius" in generations of ordinary citizens—and in so doing, helped in a very real way to give birth to the American Dream itself.

Ironically, few people today even know the origin of the term "the American Dream." In fact, it was coined in 1931, by the historian James Truslow Adams in his book *Epic of America*, and it is instructive to read what Adams meant by it:

> "The American Dream, that has lured tens of millions of all nations to our shores in the past century,

xl "*Silicon Valley wins in securing U.S. patent office*," San Francisco Chronicle, July 3, 2012.

xli "*Patenting by Entrepreneurs: The Berkeley Patent Survey Part III of III*," PatentlyO, July 21, 2010.

xlii Reported in *American Jurist and Law Magazine*, vol. 1 (1829), courtesy of B. Zorina Khan.

has not been a dream merely of material plenty, though that has doubtless counted heavily. It has been much more than that. It has been a dream of being able to grow to fullest development as a man and woman, unhampered by the barriers which had slowly been erected in the older civilizations, unrepressed by social orders which had developed for the benefit of classes rather than for the simple human being of any and every class."

Only in America could a working class youth named Thomas Edison with less than three years of schooling develop himself into the world's greatest inventor—a visionary who gave the world some of the most important technologies of late nineteenth- and early twentieth-century life.

This is exactly what the Founders had in mind when they created the U.S. patent system.

1.6 Patent-Eligible Inventions

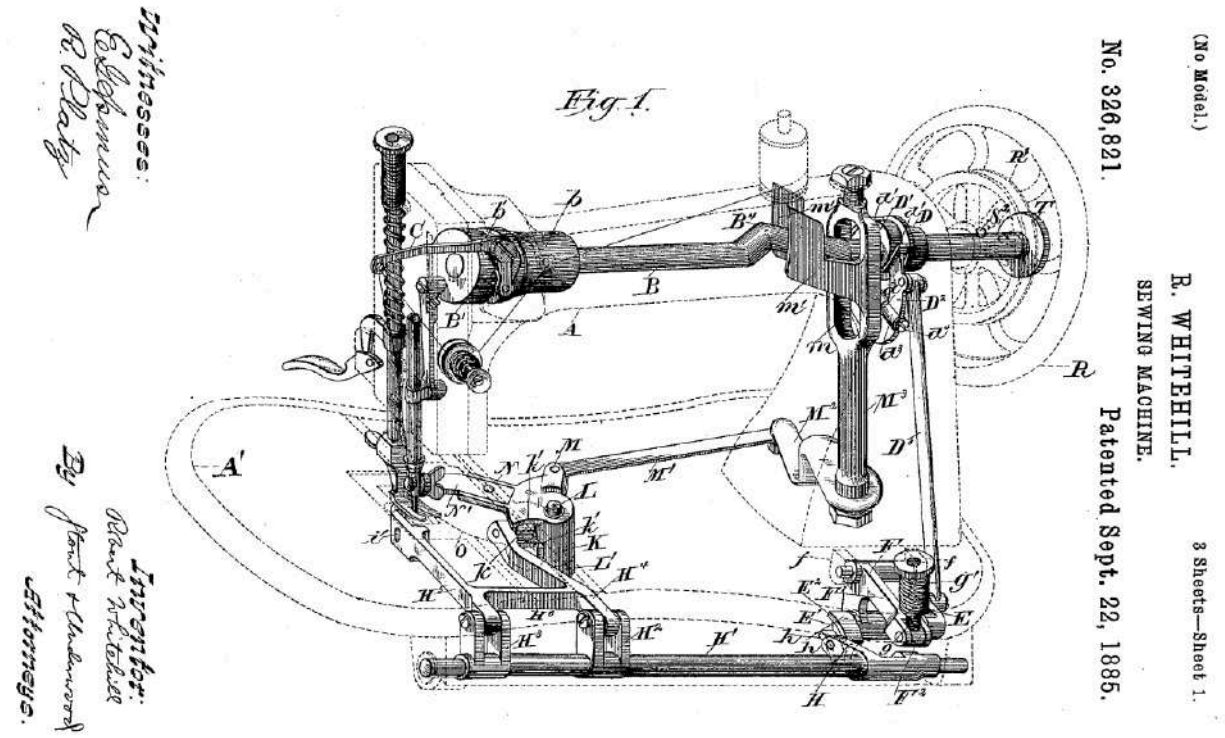

Figure 1.15 USPTO Patent No. 326821 for a sewing machine. (credit: USPTO via Wikimedia Commons / Public domain)

Learning Objectives

After completing this section, you will be able to

- Identify the characteristics of a patentable invention.
- Understand what is not patentable and why.

What, Exactly, Can You Patent?

Title 35 of the United States Code (the Patent Act) allows anyone who invents or discovers any new, non-obvious, and useful machine, manufacture, process, or composition of matter—or who makes an improvement of any of the above—to obtain a patent.[xliii]

These four kinds of patentable inventions fall into one of two categories: They are products or processes.[xliv]

xliii 35 U.S.C § 101.

xliv Arthur R. Millerand Michael H. Davis, *Intellectual Property: Patents, Trademarks, and Copyright in a Nutshell*. (5th ed., p. 25). St. Paul MN: West Publishing Co., 2007.

Product or Process?

Products are physical things—whether they be machines (a new type of robotic welder), manufactures (an artificial knee made of titanium), or compositions of matter (a new chemical "superglue" for binding materials together). In this photo, Elon Musk observes the robotic arms in the Tesla Motors factory. Specialized manufacturing equipment like this are patentable products.

Processes (or methods), on the other hand, are a means to an end—either a means of doing something new (being able to pay for purchases directly from your smartphone), or a new way of doing something old (using "pinch, swipe, and zoom" gestures on a touchscreen, rather than clicking drop-down menus, to manipulate text, music, and images on a smartphone).

You Cannot Patent Ideas

All patented inventions fit into one of these four categories: machine, manufacture, process, or composition of matter. But not everything that fits in one of these four categories can be patented. And the most important reason why one thing is patentable and another is not lies in the difference between ideas and applications.

You cannot patent an idea for a better mousetrap—not unless it can be developed into a new, non-obvious, and useful machine, manufacture, process, or composition of matter that can actually accomplish the task. You may have a genius idea for faster-than-light travel, but that will not get you a patent unless you can outline how to develop a tangible process or device for actually doing so, in which case you can seek to patent it.

Put another way, "talk is cheap" when it comes to securing a patent. The U.S. Patent and Trademark Office offers no judgment as to the wisdom or desirability of any particular invention—patent No. 2,882,858 for a bird diaper is certainly proof of that. But it absolutely will insist that every invention include a tangible device or process for achieving its intended purpose before it deems the invention worthy of a patent.

Mathematical Formulas Not Patentable

There are other discoveries that fall into the broad category of abstract ideas and are thus unpatentable. You cannot patent a mathematical formula. You cannot patent a law of nature, such as Einstein's $E=MC^2$. And you cannot patent natural phenomena like electricity (discovered by William Gilbert in 1600) or the Higgs particle that gives all matter its mass (discovered by researchers at the Large Hadron Collider on July 4, 2012). These all exist independently of human intervention, whether we have discovered them or formulated their rules yet or not, and must be freely available to all of humanity for its understanding and betterment.

To restate the distinction, you cannot patent electromagnetism but you can patent a telegraph that uses electromagnetism to communicate rapidly over great distances, as Samuel Morse did in 1840 with patent no. 1647. And although you cannot patent light waves, you can patent a fiber optic wire that employs light waves to communicate even more rapidly and over greater distances, as Corning Glass researchers did in 1970 with patent no. 3,711,262.

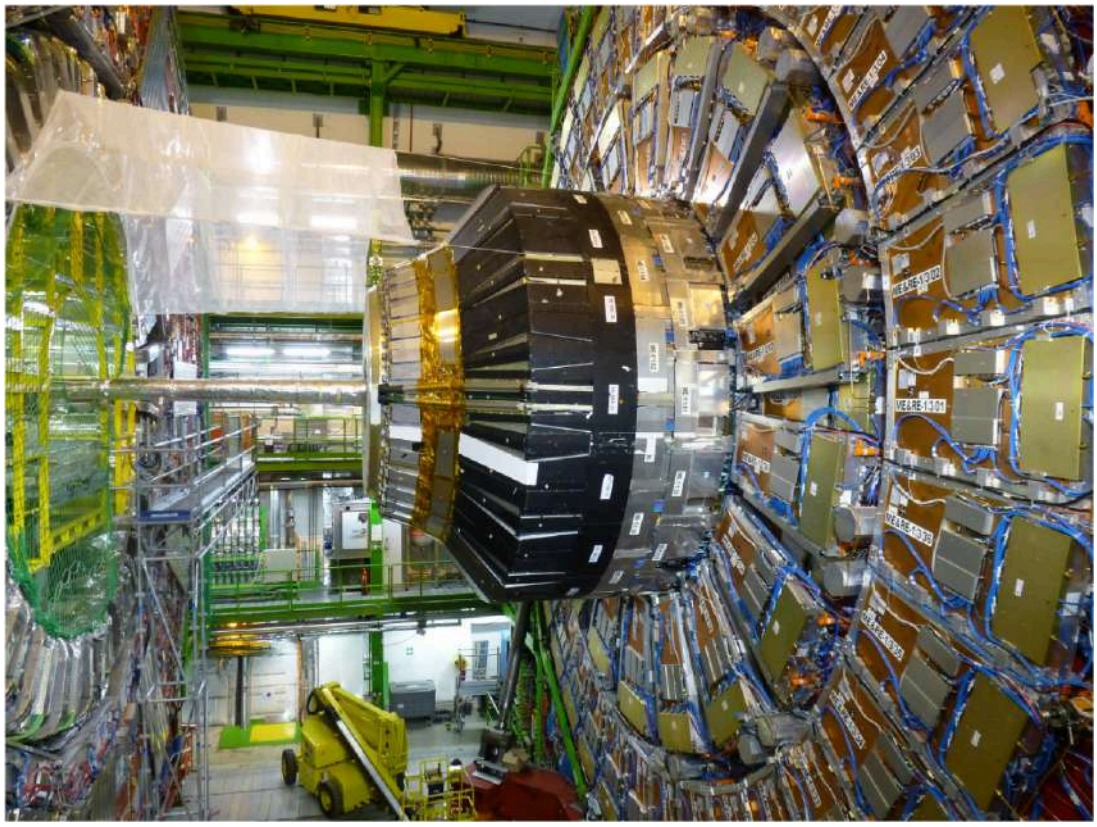

Figure 1.16 Portion of the Large Hadron Collider. (credit: Photograph by Luigi Selmi via flickr / CC BY 2.0)

Can You Patent Computer Software?

The boundary between ideas and applications might seem clear, but it has become blurred since the advent of computer technology 40 years ago, especially regarding the patentability of software.

To learn more, watch this video from PBS Digital Studios (https://openstax.org/l/PBSFirstPatent) about the first software patent ever awarded and to learn a bit about the debate around software patentability.

Mixed Verdicts on Software Patentability

The federal courts and the U.S. Supreme Court have tried to clarify the limits of patentability in the computer age. Three Supreme Court cases in particular—often called the "patent-eligibility trilogy"—reveal the evolution of its thinking about software patentability.

In 1972, the Supreme Court held in *Gottschalk v. Benson* (https://openstax.org/l/Gottschalk_v_Benson) that an algorithm in a computer program—in this case, a mathematical procedure executed electronically that was similar to long division with paper and pencil—was in and of itself not patentable. Phenomena of nature, mental processes, and abstract intellectual concepts are the basic tools of scientific and technical research, the court noted, and therefore could not be patented lest it foreclose others from using the algorithm and thereby stifle rather than promote technological progress. Granting a patent in this case, the court said, would be analogous to having granted Samuel Morse a patent covering all possible uses of electromagnetism in communications, rather than for the specific method and apparatus he actually invented.

The court made a point of saying, however, that its decision did not mean that computer software could not be patented—only that software whose only useful characteristic was an abstract algorithm could not be patented.

The Supreme Court further refined its thinking on software patentability in the 1978 case *Parker v. Flook* (https://openstax.org/l/Parker_v_Flook). Unlike the attempt to patent all uses of an algorithm in the *Benson*

case, here the use of a software algorithm was limited to a specific application—setting off an alarm during the catalytic chemical conversion of hydrocarbons. This was a specific and tangible use of an algorithm, but the Court still ruled the software unpatentable because it felt the application itself was not inventive.

But once again, the Court left the door open: "Even though a phenomenon of nature or mathematical formula may be well known, an inventive application … may be patented."

Three years later, the Supreme Court made its third attempt to define the patent-eligibility of software. In *Diamond v. Diehr* (https://openstax.org/l/Diamond_v_Diehr), the Court ruled that although algorithms by themselves are not patentable, a software program that used algorithms to govern the molding of raw synthetic rubber into cured precision products was in fact patentable because it involved "transforming or reducing an article to a different state or thing."

The Software Picture Blurs Even More

Taken together, the three rulings appeared for a time to arrive finally at a coherent definition of software patentability—namely, that although algorithms by themselves are abstract concepts and therefore unpatentable, software programs may be patented if they employ algorithms to produce a tangible and inventive or transformative result. This view was further augmented by a 1998 U.S. Court of Appeals for the Federal Circuit decision in *State Street Bank v. Signature Financial Group* (https://openstax.org/l/StateStreet_v_Signature), which extended software patentability to software-enabled methods of doing business so long as these produced a "useful, concrete, and tangible result."

But this definitional equilibrium was not to last. The "useful, concrete, and tangible result" test in *State Street Bank* was rejected ten years later by the same court in *In re Bilski* (https://openstax.org/l/InreBilski), which upheld the USPTO's denial of a patent for a method of hedging risk in commodities trading. The court instead offered a "machine or transformation" test, which allows a software program or business method to be patented only if it is implemented on a specific machine to achieve a special purpose that is novel, non-obvious, and useful; it transforms an article from one thing or state to another.

But in its review of *Bilski v. Kappos* (https://openstax.org/l/Bilski_v_Kappos), the Supreme Court ruled that while the "machine or transformation" test was useful, it was not the only test for patentability. In addition to the "machine or transformation" test, the court decreed (rather vaguely) that any future test should be "grounded in the examples and concepts" expressed in its original "patent-eligibility trilogy" of opinions. They thus reaffirmed that business methods may indeed be patentable.

Finally, a "Pretty Clear" Message

While businesses and the courts were trying to figure out what the other tests for patentability might be, the Supreme Court provided further input with its March 2012 decision in *Mayo Collaborative Services v. Prometheus Laboratories* (https://openstax.org/l/Mayo_v_Prometheus). Here, the court ruled that a process enabling physicians to correlate blood test results with medication levels to achieve the most appropriate dosages was ineligible for patent protection."

But then in June of 2014, The Supreme Court issued what may prove to be its most consequential decision on the patentability of software in the 33 years since *Diamond v. Diehr*. In *Alice v. CLS Bank*, the Court ruled that taking some activity that people have been doing for centuries—in this case, holding funds in escrow until a transaction is completed—and then merely "doing it through a computer" did not turn this age-old activity into a patentable new invention.

At first, many observers believed that the effects of the *Alice v. CLS Bank* ruling would be very limited. Only the patent in the suit was invalidated, after all, not all software patents. What's more, the abstract reasoning of the court in its decision did not provide clarity on how the ruling may or may not apply to other kinds of software patents—for example, the sort of software used in manufacturing that was ruled patentable in the 1981 *Diamond v. Diehr* case.

But by October of 2014, a series of lower court decisions applying the new *Alice v. CLS Bank* standard had invalidated 13 additional software patents. As technology policy journalist Timothy B. Lee noted, "The courts are sending a pretty clear message: you can't take a commonplace human activity, do it with a computer, and call that a patentable invention."

> "*The courts are sending a pretty clear message: you can't take a commonplace human activity, do it with a computer, and call that a patentable invention*."
>
> -Timothy B. Lee, technology policy journalist

How far reaching will the impact of *Alice v. CLS Bank* be? "This doesn't necessarily mean that all software patents are in danger," Lee noted, because the patents involved "were particularly vulnerable to challenge under the new *Alice* precedent. But it does mean that the pendulum of patent law is clearly swinging in an anti-[software] patent direction."

Overcoming the Alice Paradox

By late 2015, however, it was clear that the *Alice* ruling was having an impact not only on patent law, but also on the innovation process itself within corporate America.

As John Cronin, a former top inventor at IBM and now the CEO of the innovation-on-demand firm ipCreate, observes: "The highest-value products and services today—the ones that increasingly drive margins in business—involve cloud computing, Big Data, machine learning, connectivity, mobility and location-based services, and on-demand and anything-as-a-service software applications and business processes. But ironically, these high-value innovations are also the most difficult to patent nowadays as a result of the Supreme Court's *Alice* decision."

Cronin calls this the "*Alice* Paradox," and it has left many in-house patent groups struggling for a solution. One thing is clear: To be patentable nowadays, software has to take a genuinely-inventive step and either trigger an action, employ a device, or in some other way produce a tangible transformative result.

In addition, smart companies are trying to address patentability issues involving software and business processes much earlier in the innovation cycle, before huge investments are made in R&D that may turn out to be not patentable.

Overall, addressing the "*Alice* Paradox" will be critical for many companies because patenting clearly adds value to a new product or service. In a groundbreaking joint study from Carnegie Mellon University, Georgia Institute of Technology, and Duke University entitled "R&D and the Patent Premium," economists found that "the patent premium for innovations that were patented is substantial. Firms earn on average a 50% premium over the no patenting case, ranging from 60% in the health-related industries to 40% in electronics."[xlv]

The Debate on Software Continues

The debate over the dividing line between patentable versus unpatentable computer software-related inventions continues—in corporate R&D labs and in the courts.

However, there are some who don't believe that software and business methods should be patented under any conditions. They argue first of all that software is different from other industries—more iterative and more incremental, with each advance building upon thousands of previous advances. Therefore, their thinking goes, software should not be entitled to patents that ought to be more properly reserved for truly breakthrough or revolutionary inventions.

There are two problems with this argument. First, as anyone in the semiconductor, chemical, or medical device

xlv Ashish Arora, Marco Ceccagnoli, and Wesley M. Cohen, "*R&D and the Patent Premium*," Science Direct, International Journal of Industrial Organization Issue 26, 2008.

industries can attest, innovation is no more iterative, incremental, or cumulative in software than is innovation in many other industries. Indeed, there are probably just as many or more patents for incremental semiconductor inventions that build modestly upon earlier work as there are patents for incremental software inventions that do the same.

Figure 1.17 An Apple Macintosh Mouse M0100 Beige from 1984 (left), and an Apple Magic Mouse from 2009 (right) (credit: Photograph by reneko via flickr / CC BY 2.0)

As patent scholar and veteran practitioner Paul Janicke of the University of Houston put it, "There really are no breakthrough inventions—at least not in the sense imagined by these critics. Everything moves one step at a time. In fact, every time I thought I encountered a large leap, it turned out that I didn't know the full extent of the prior art."

The second problem with their logic is that the Founding Fathers specifically designed the patent system to encourage precisely this kind of incremental invention, so that ordinary people—using only the basic technical skills possessed by most citizens—could participate in rapidly developing the economy from the ground up. This was a very different approach than that of elitist European patent systems of the day, and it produced results that the rest of the world very soon came to envy (see "Section 1.5: What the U.S. Patent System Wrought").

As the October 21, 1876, issue of Scientific American noted, "In the aggregate the little things—which in England or the continent would not or could not be patented—probably add more to the wealth and wellbeing of the community … than the great things do." Or to quote Thomas Jefferson himself: "A smaller [invention], applicable to our daily concerns, is infinitely more valuable than the greatest which can only be used for great objects."[xlvi] Any uncertainty over the validity of incremental patenting was removed once and for all by the Patent Act of 1952. Consistent with the Founders' intentions, U.S. law now explicitly holds that patent eligibility is not restricted solely to revolutionary inventions or "flash of genius" discoveries, but also includes more iterative advances in the state of the technological art so long as these meet the requisite novelty, non-obviousness, and utility criteria.

Evidence Shows Software Patents Don't Hinder Innovation

Another argument made by critics of software patenting is that patents stifle innovation and foster monopolization in the software industry. Research, however, suggests that this is decidedly not the case.[xlvii] If anything, in fact, the software industry has become even more innovative, more diversified, and more start-up friendly since patenting became common in the 1990s. You need only look at the huge proliferation of highly innovative start-ups in today's social media and apps software fields to see just how erroneous the claim is that software patents stifle innovation. Or consider for a moment the fate of the Blackberry, once dominant but within the space of a couple of years superseded by more innovative competing smartphone makers.

Finally, some critics insist that the intangible nature of software ought to disqualify it from patentability. But as noted earlier, the Supreme Court has affirmed repeatedly that although abstract concepts cannot be patented, software that employs algorithms to produce a tangible and inventive result—e.g., software that governs the molding of raw synthetic rubber into cured precision products—may be patented.

It's also helpful to view this issue in a larger context. Forty years ago, 80 percent of the market value of all public companies resided in their tangible physical assets—their plant, equipment, and raw materials. In today's Knowledge Economy, however, it is intangible assets—intellectual property—that make up 80 percent of the market value of public companies.[xlviii]

Indeed, the entire history of economic progress on our planet may be described as one long climb by humanity up the ladder of abstraction—from brute force to the subtle use of energy, from wealth derived from tangible resources and industrial machinery to wealth derived from ever-more ingenious ways to deploy that energy and those resources. It seems only logical, therefore, to expect that invention itself should follow a similar trajectory—from the realm of the tangible to the realm of the intangible.

Ironically, the debate over patents for software, business methods, and other intangible inventions is nowhere more heated than on the Internet, itself an intangible realm in which "virtual" businesses launched with little more than hope and electrons (e.g., Facebook) are creating real and substantial wealth in the form of new products, new services, new jobs, and new economic growth for society. Yet strangely, those who have no trouble accepting the Internet as the intangible fruit of information age invention seem to get stuck in industrial age conceptions of what should and should not be patentable.

Odd perhaps, but not surprising. The expansion of patentable subject matter into new and more intangible realms has always met with resistance. Patents involving the use of electricity were condemned 140 years ago, as were biotechnology patents 30 years ago, and of course software patents when they began to appear in large numbers 20 years ago. In each case, critics warned that these new kinds of patents would hold back further scientific discovery and innovation. Yet in each case, innovation and discovery actually intensified and their benefits to society multiplied.

When Gene-Related Inventions Are Patentable

A similar resistance is also developing toward gene-related patents. These began to be issued in significant numbers after the Supreme Court's 1980 ruling in *Diamond v. Chakrabarty*, which upheld the first patent on a newly-created living organism—a bacterium for digesting crude oil in oil spills. Since then, patents have been granted for isolated gene sequences, but so far only on those with known functions and not on naturally-occurring genes in humans or other organisms. Patents have also been granted for gene sequences used in diagnostic testing, and on gene sequences that have been altered to make them more useful in a specific

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xlvi From Jefferson's letter to George Fleming in 1815, excerpt from *The Jefferson Cyclopedia*, courtesy of B. Zorina Khan.

xlvii Robert Merges, "*Patents, Entry and Growth in The Software Industry*," University of California at Berkeley School of Law, Berkeley, California, 2006. Retrieved from: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=926204

xlviii Op. cit., Ocean Tomo.

application.

In March of 2010, however, a federal district court judge ruled in the case of *Myriad Genetics* that even isolated DNA is fundamentally the same as naturally- occurring DNA and is therefore ineligible for patenting. His ruling was reversed by the U.S. Court of Appeals for the Federal Circuit in July, 2011. But the Supreme Court then set aside that decision and directed the appeals court to once again review the case in light of its March, 2012 *Prometheus* decision. On August 16, 2012, however, the U.S. Court of Appeals for the Federal Circuit once again reaffirmed Myriad's right to patent the isolated genes BCRA1 and BCRA2, which are involved in most inherited forms of breast and ovarian cancer.

On June 13, 2013, however, the U.S. Supreme Court finally determined in a unanimous decision that a naturally occurring DNA segment is a product of nature and cannot be patented merely because it has been isolated, thereby invalidating Myriad's patents on the BRCA1 and BRCA2 genes. The Court did rule, however, that the manipulation of a gene to create something not found in nature—such as a strand of synthetically-produced complementary DNA (cDNA)—could still be eligible for patent protection.

To the average citizen—and perhaps to many patent lawyers as well—all this legal hairsplitting over the limits of patentability in the computer age must seem a bit like the debates in medieval times over how many angels can dance on the head of a pin. But two critical points must be borne in mind regarding these debates.

First, no matter what anyone thinks the limits of patentability in an ideal world ought to be, out in the real world where we actually live, software, business method, and gene patents are multi- billion-dollar facts of life that businesses ignore only at their peril.

Second, whatever confusion may exist today, the debates over patentability in the computer age will almost certainly be resolved eventually to most people's satisfaction, just as all previous debates over patentability have. For if nothing else, the two hundred year-plus history of the courts and the patent office demonstrate a remarkable ability on the part of these institutions to adapt to the challenges posed by new technologies and new economic conditions.

1.7 Criteria for Patenting

Learning Objectives

After completing this section, you will be able to

- Identify the criteria that an invention must meet to earn a patent.
- Understand why non-obviousness is the most difficult hurdle to overcome.

Can I Patent That?

Before reading this section, please watch this overview video (https://openstax.org/l/CanIPatent) covering what you can and cannot patent. You can't patent an idea (like an idea for a better mousetrap), only an application of that idea in a practical invention. Novelty, utility, and non-obviousness—the holy trinity of patents.

Now that you've learned what can be patented and what cannot, we will next examine the criteria for determining if a patent-eligible invention actually merits one. These criteria center around three concepts mentioned in the previous section and enumerated in the Patent Act: novelty, utility, and non- obviousness.[xlix]

Let's discuss these three concepts in greater detail.

Novelty

The requirement in Sections 101 and 102 of the Patent Act for novelty in an invention means that to qualify for a patent, a machine, manufacture, process, or composition of matter must not have been previously described

xlix 35 U.S.C.§101, §102, and §103

or known. Specifically, it must not have been patented, described in an unpublished or published patent application, explained in a printed publication such as an article or technical paper, or publicly known prior to the filing date of the new patent application. In addition, it must not have been published, used in public, or offered for sale by the applicant or their colleagues more than 12 months prior to the filing of a patent application.

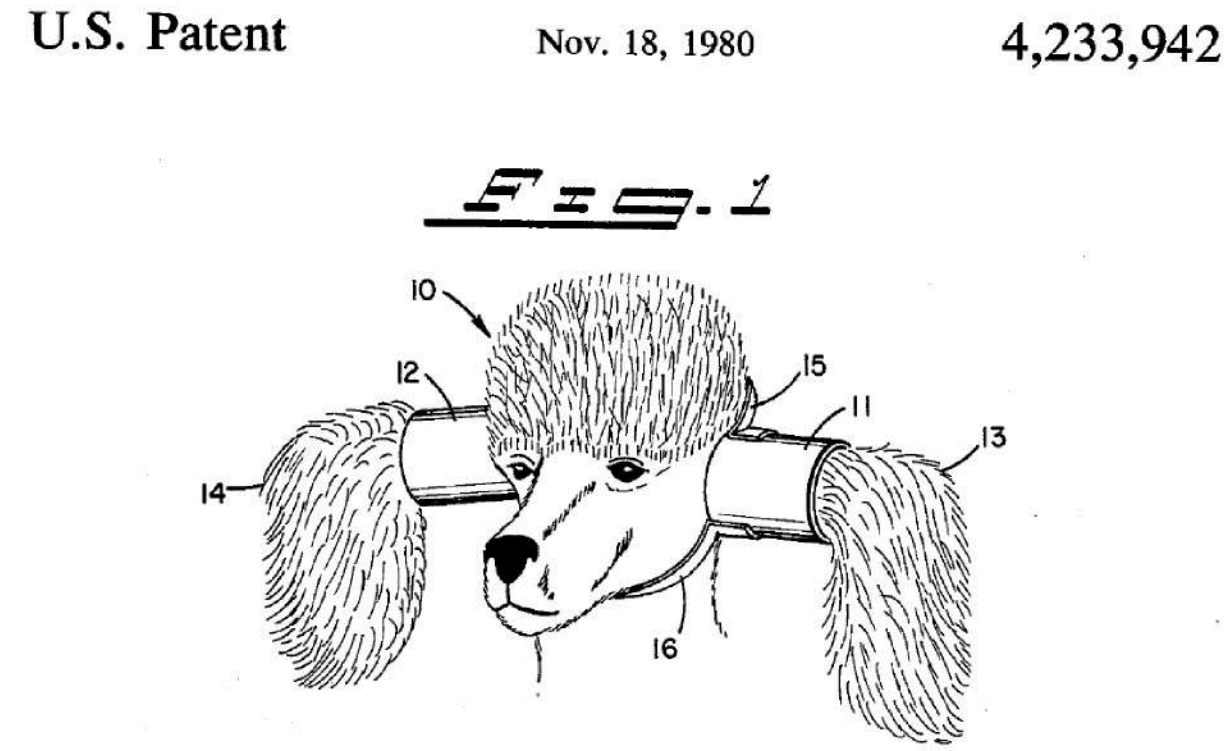


Figure 1.18 Patent for dog ear protectors designed to keep a dog's hair clean while eating. (creadit: USPTO via uspto.gov / Public domain)

If any of the above is true of an invention, it is said to have been "anticipated" and cannot be patented. These novelty requirements exist whether the "prior art"—the catchall term for any previous patent, publication, or use—is domestic or foreign.

This does not mean, of course, that your faster-than-light warp drive is unpatentable simply because it was envisioned in a general way in episodes of *Star Trek* and its successors' television shows, and in many *Star Trek* books.

"It is not enough that an invention be suggested by the literature," explains the eminent New York University scholar Arthur R. Miller and his coauthor Michael H. Davis' in their textbook for law students.[l] "Nor is it sufficient that the literature made the invention inevitable—that bears on the question of non-obviousness. The test, with one major exception, is whether enough of the invention has been disclosed to enable a person skilled in the applicable art to duplicate the product or process."

That one exception, writes Miller and Davis, is public use of the invention. In that case, even a limited disclosure that does not reveal the secrets of the invention can still foreclose a patent if the public use of it "discloses the invention's benefits."

Prior Art Must Be Enabling

In the era of social media, the previously mentioned requirements could pose a novelty barrier if not handled

l Op. cit., Miller & Davis.

properly.

For instance, if you develop a new watch that displays information from an iPhone, and then disclose it on the crowdsourced funding site Kickstarter in order to raise capital from thousands of small-time investors, then you will probably want to file a patent application prior to, or certainly no later than a year after, your disclosure of the benefits of your watch to the public.

But in the absence of such public use, disclosure in prior art must be substantial and enabling to be disqualifying.

As patent attorney and writer of the widely read *IP Watchdog* blog Gene Quinn explains:

> "What *Star Trek* teaches is the idea of warp speed wit some suggested articulation of how it could be achieved. But that's not informing enough. Someone could not make and use the device based on what is taught in *Star Trek*. So if you actually figure out how to make a faster-than-light warp drive work—and can describe it sufficiently so that someone skilled in the science of space propulsion could build it—then yes, it would be patentable." Take heart, *Star Trek* fans!

Utility

As the *Star Trek* example suggests, the novelty issue can also touch on the question of utility—the second patentability criteria. Utility has a special meaning in patent law, which is simply that an invention must function and be of some benefit qualitatively—although no minimum quantum of benefit is necessary. The landscape of business is littered with companies that have invented not very useful or necessary products. But these may satisfy the requirement for utility if at least someone would find them useful.

But snake oil medicines and other products that do not work in any meaningful way will not meet the requirement for utility. "The inventor of an ineffective drug may not obtain a patent merely because he convinces gullible patients that it has a non-existent curative effect," Miller and Davis note. "It is not so much that it lacks a minimum quantum of benefit (the patients may find it subjectively useful), but it is, instead, that it has an impermissible fraudulent quality."

Figure 1.19 An ad for Worner's Famous Rattlesnake Oil, circa 1914. (credit: Wormer's Famous Rattlesnake Oil via Wikimedia Commons / Public domain)

Even when no fraud is intended, the utility of a product or process must be demonstrate in a patent application—not presumed, but affirmatively demonstrated. Simply put, the thing or the method you have invented must actually work as it is intended and claimed to work.

"Forget *Star Trek* for a moment," says Quinn. "On a more mundane level, the USPTO used to deny patents for methods and compositions for re-growing hair. These were seen as lacking utility because re-growing hair was believed to be impossible. Finally, someone was able to prove that his method and composition actually re-grew hair on a bald scalp. The patent examiners withdrew their rejection, and patents for such products have issued ever since."

Interestingly, Quinn explains, since the earlier patent applications on hair-growing products didn't describe

anything that actually worked, they could not be used under the novelty bar to block later patent applications for hair-growing products that did work.

Non-Obviousness

An invention may be new. It may also have utility. But to meet the criteria for a patent, it must also be non-obvious under Section 103 of the Patent Act.

Let's now dig deeper into the requirements of the concept of non-obviousness.

Requirements

The requirement for non-obviousness may be illustrated with a fanciful example. If the number 4 were an invented product rather than a mathematical symbol, then even though the number 4 had never been invented before and was thus novel, it would still not be patentable. That's because someone skilled in the art could have put 2 and 2 together to come up with it.

But to offer a more practical example, say you invent a wheeled cart to move office supplies more easily between departments. If this is the first such wheeled office cart in history, you can get a patent for it. But if you then decide, "Hey, why not put those wheels on a chair?" you won't get a patent for it. That's because combining two such widely-known and available elements would be obvious to anyone skilled in the art of office furniture design.

But things are not so obvious when it comes to inventing a camera phone. Even though it's composed of well-known and widely-available components, combining the two did satisfy the requirement for non-obviousness because it became more than the sum of its parts and met a large and previously-unfilled need in the marketplace. The millions of people who take selfies everyday is certainly proof of that.

There are various ways of presenting evidence that your invention satisfies the non-obvious requirement for patentability. You can demonstrate that the existing elements of your invention, although individually already known, yield an unexpected or hidden result. Or you can show that your invention, although composed of well- known and widely available components, when combined satisfies a long-felt but previously unfilled need in the marketplace, thus indicating its non-obviousness. Both of these demonstrations of non-obviousness apply to the camera phone example above.

The One-Click Patent

Some people criticized the so-called "one-click" patent granted by the USPTO to Amazon.com in 1999 for Amazon's system enabling customers to buy an item with a single click of the mouse—with the payment information needed to complete the purchase already having been entered by the user previously.

They contended that although Amazon might have been the first company to employ the process, it was an obvious and inevitable iteration of already- existing mouse-clicking procedures for making a purchase online. The patent office reexamined the patent, however, and in 2007 upheld the validity and the bulk of its major claims.

It is important to note that it's an invention's function that is often examined to determine obviousness. "Even though it may be obvious that a certain object can be constructed in a certain way, its utility and novelty may lie in its functional use, not its construction," write Miller and Davis. "Therefore, the prior art must be used to determine whether the invention's new and useful function, not its construction, is non-obvious."

During the first half of the twentieth century, the courts often saw an invention as obvious when it lacked a "flash of genius" and was merely an incremental advance over the state of the art as opposed to what they imagined would be a "revolutionary" breakthrough discovery. But that subjective interpretation of inventiveness was overturned by the 1952 Patent Act, which codified a more objective standard—namely, that whether an invention is developed through laborious trial and error or through a eureka flash-of-genius moment has no bearing on its obviousness or non-obviousness.

Overcoming Patent Hurdles

Taken together, the three patenting criteria—novelty, utility, and non-obviousness—function like the obstacles in an Olympic hurdles race. The utility hurdle is easiest to overcome. The novelty hurdle less so. But by far, the highest hurdle facing inventors is non-obviousness.

“The vast majority of all rejections at the patent office are for obviousness reasons,” explains retired Chief Judge Paul Michel of the U.S. Court of Appeals for the Federal Circuit, the main court that handles patent appeals. “And it’s not very difficult to see why. Given the millions of patented inventions over the decades, the tens of millions of past and current products on the market, it’s not all that easy to come up with an invention that is not only novel but also truly non-obvious to someone with ordinary skill in the state of the art.”

Many believe that the criteria for patenting weakened in the late 1990s and early 2000s, and that as a result, too many poor-quality patents were issued. To the extent this problem exists, one of its likeliest causes is the fivefold increase in patent applications that has taken place over the last 30 years without a commensurate increase in USPTO funding, resources, and capabilities.

Despite these challenges, the USPTO has made substantial progress in the last five years in improving examiner training and tools, reducing the backlog of pending applications, and strengthening the quality of the examination process for patent applications. This progress has been made despite oftentimes-unclear or contradictory patentability rulings from the courts.

Patent quality is essential to the maintenance of public confidence in the patent system. After all, when property rights (either real or intellectual) are seen as overbroad, ill-defined, or illegitimate, individuals and businesses are more willing to trespass on them.

1.8 Other Types of Patents

Figure 1.20 (credit: Photograph by Brian Boucheron via flickr / CC BY 2.0)

Learning Objectives

After completing this section, you will be able to

- Explain the diff ences among utility, plant, and design patents.
- Describe common patent misconceptions.

Up to this point, we have focused only on the most common types of patents, called **utility patents**, which preclude others from making, using, or selling the invention during the term of the patent, which begins on the grant date and ends 20 years from the filing date (for an average of 17 to 18 years). But in addition to these, the Patent Act also provides for two other types of patents—**plant patents** and **design patents**.

Plant Patents

Plant patents were first created by the Patent Act of 1930 (https://www.openstax.org/l/PatentAct1930) , which had been proposed by Luther Burbank to protect new species of asexually reproduced plants, mostly flowers. These are different than the utility patents granted to bioengineered plants used in agriculture. The United States was the first country in the world to grant plant patents, and even today many countries continue to deny protection for plants. Indeed, even some signatories to the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) administered by the World Trade Organization (WTO) reserve the right to deny patents for plants.

Although the requirements for plant and design patents are substantially the same as those for utility patents, there are some crucial differences. The most important of these is the substitution of a different test for one of the three criteria for patentability discussed in the previous section.

Instead of novelty, utility, and non-obviousness, the criteria for plant patentability are novelty, **distinctiveness**, and non-obviousness. To be patentable, plants must be cultivated rather than found in the wild, and plant

patents are granted only to protect a new, distinct, and non-obvious variety of asexually reproduced plant—i.e., those grown not with seeds but by grafting, budding, or cutting. A plant need not be useful to qualify for a patent, but it must be distinctive in its color, habit, soil, flavor, productivity, form, or other aspects.

Design Patents

Design patents are granted to protect new, original, and non-obvious ornamental designs for articles of manufacture. Examples include Apple's 2009 and 2010 patents—No. D593087 (https://www.openstax.org/l/USD593087) and No. D618677 (https://www.openstax.org/l/USD618677) —which covered among other things the unique, rounded-corner design of the iPhone, as well as its 2005 design patent No. D504889 (https://www.openstax.org/l/USD504889) for the look and feel of the iPad. Design patents can be just as valuable as utility patents, as Apple discovered when a jury awarded it $1 billion in damages against Samsung in August 2012, for the latter's infringement of Apple's utility and design patents. The case is currently on appeal.

Like plant patents, design patents also substitute a different test than utility in their requirements for patentability. Instead of the novelty, utility, and non-obvious requirements for utility patents, the criteria for design patents are novelty, **ornamentality**, and non-obviousness.

It was on the subject of design patents that one example of media confusion appeared. The *New York Times* published an article November 16, 2012, declaring in a sensational headline that "Apple Now Owns the Page Turn (https://www.openstax.org/l/ApplePageTurn) ." The article claimed that a new Apple design patent "gives Apple the exclusive rights to the page turn in an e-reader application." According to the article's author, this showed "just how broken the patent system is."

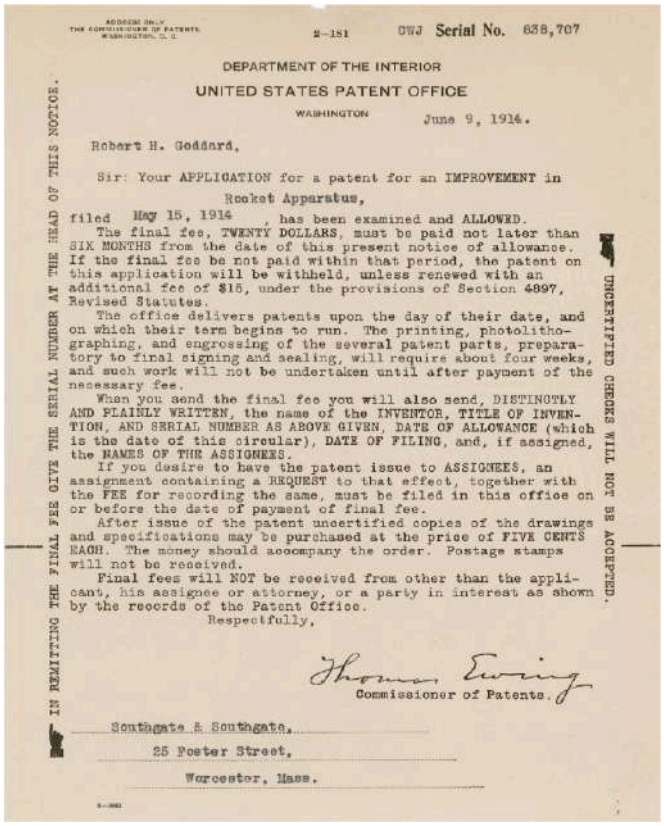
Had the author of the article even read an obvious and easily-available source as the Wikipedia entry on design patents, however, he would have learned that design patents are granted only for nonfunctional ornamental designs. In fact, says Wikipedia, "design patents can be invalidated if the design has practical utility."

What Apple actually "owns," therefore, is not the "page turn" function itself but merely the particular ornamental design of the way a page turn is executed in their devices.

Another example of confused media reporting on patent matters was the February 6, 2013, *Forbes* article headlined: "Is the Patent System Broken? Well, Amazon's Just Patented the Sale of Second Hand Goods (http://www.forbes.com/#/62ee8b9728c2) ." Amazon actually did no such thing, but the author of that article probably made this assumption after reading the abstract of the patent describing its general subject matter. Like many reporters new to patent issues, the author didn't realize that the abstract tells you literally nothing about the exclusive rights conferred by a patent. Only the claims of the patent detail the specific exclusionary rights of the patent holder.

Indeed, when you read the claims of the Amazon patent in question, you discover that Amazon hasn't claimed ownership of the idea of a "market in second-hand digital goods" at all. Instead, the claims involve merely a very specific and novel method of conducting such a market. Meanwhile, Apple, ReDigi, and other firms have patented their own alternative methods of conducting a secondary digital market.

1.9 The Patenting Process



ADDRESS ONLY THE COMMISSIONER OF PATENTS WASHINGTON, D. C.

S-181 GWJ Serial No. 638,707

DEPARTMENT OF THE INTERIOR
UNITED STATES PATENT OFFICE
WASHINGTON June 9, 1914.

Robert H. Goddard,

Sir: Your APPLICATION for a patent for an IMPROVEMENT in Rocket Apparatus, filed May 15, 1914, has been examined and ALLOWED.

The final fee, TWENTY DOLLARS, must be paid not later than SIX MONTHS from the date of this present notice of allowance. If the final fee be not paid within that period, the patent on this application will be withheld, unless renewed with an additional fee of $15, under the provisions of Section 4897, Revised Statutes.

The office delivers patents upon the day of their date, and on which their term begins to run. The printing, photolithographing, and engrossing of the several patent parts, preparatory to final signing and sealing, will require about four weeks, and such work will not be undertaken until after payment of the necessary fee.

When you send the final fee you will also send, DISTINCTLY AND PLAINLY WRITTEN, the name of the INVENTOR, TITLE OF INVENTION, AND SERIAL NUMBER AS ABOVE GIVEN, DATE OF ALLOWANCE (which is the date of this circular), DATE OF FILING, and, if assigned, the NAMES OF THE ASSIGNEES.

If you desire to have the patent issue to ASSIGNEES, an assignment containing a REQUEST to that effect, together with the FEE for recording the same, must be filed in this office on or before the date of payment of final fee.

After issue of the patent uncertified copies of the drawings and specifications may be purchased at the price of FIVE CENTS EACH. The money should accompany the order. Postage stamps will not be received.

Final fees will NOT be received from other than the applicant, his assignee or attorney, or a party in interest as shown by the records of the Patent Office.

Respectfully,

Thomas Ewing
Commissioner of Patents.

Southgate & Southgate,
25 Foster Street,
Worcester, Mass.

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

UNCERTIFIED CHECKS WILL NOT BE ACCEPTED.

Figure 1.21 Notice of Examination and Approval of Patent Application. (credit: National Archives and Records Administration via Wikimedia Commons / Public domain)

Learning Objectives

After completing this section, you will be able to

- Describe the steps in the patent application process.
- Discuss the importance of proper claims drafting.

Applying for a Patent

Much is at stake in the process of applying for a patent. Depending upon how you draft the claims and write the specification of your application, you could win or lose patent rights at any point in the examination process. In addition, any patent rights you win can be worth a considerable amount of money, and can be enforced by the U.S. federal courts.

An applicant must first determine whether to file an application for a utility, design, or plant patent. Then, the applicant must determine their filing status: large entity, small entity, or the new category of micro entity created by the America Invents Act of 2011 (AIA) (https://www.openstax.org/l/AmericaInventsAct) . Small entities, which are universities, non-profits, and small businesses with fewer than 500 employees who also meet certain other criteria, receive a 50 percent discount on the application fees paid by large entities. Micro entities, which are small entities who have a gross income less than three times U.S. median household income or meet certain other criteria, receive a 75 percent discount. These discounts on USPTO fees for small and micro entities do not apply to the attorneys' fees often involved in applying for a patent, which can be significant.

Provisional vs. Nonprovisional Patent Application

Finally, the applicant must decide whether to file an abbreviated, "provisional" patent application or a complete, "nonprovisional" one. A provisional application consists only of the specification describing the invention for which a patent is sought, as well as any drawings that might be necessary to understand the invention. A provisional application is not subject to examination, and is viable for one year.

The chief benefits of a provisional application are twofold. It is much less expensive to file than a regular nonprovisional application—only $1,000 in official fees for large entities, $500 for small entities, and $250 for micro entities. It also gives the inventor the benefit of the earlier provisional filing date of the nonprovisional application based on the same specification, while measuring the term of the patent from the nonprovisional application's filing date.

In a sense, the provisional application serves as a placeholder for up to one year while the inventor does all the prior art searching, claims drafting, and other work required of a full and complete nonprovisional application. This priority date placeholder function can be important given that many companies and inventors are working on new products and services aimed at the same markets. This is especially so under the United States' new "first inventor to file" rather than "first to invent" priority regime, which some fear may give an edge to large companies with the legal and financial resources to file early and often. To the extent this concern may be valid, provisional applications can serve to mitigate any large company filing advantage.

The main disadvantage of a provisional application is that because the written description cannot be changed when filing the follow-on, nonprovisional application, all the subsequent claims in that follow-on application must be completely consistent with the earlier description language. As most inventors can attest, the understanding of an invention and its potential market—as well as the claims best suited to protect it—inevitably evolves and matures over time.

Here's how an experienced entrepreneur describes the value of a provisional application in the "first inventor to file" environment:

> "What I recommend to every entrepreneur is that if you write a new, non-obvious, and useful line of code, put it in the specification of a provisional patent application and file it. It only costs $1,000 at most. You then have a year in which to honestly evaluate where the industry is going, where the market is going, and whether your invention is truly valuable enough to pursue a patent for it."

A year might not seem very long. But a lot can happen to markets and to technology in that amount of time. Thanks to the rapid rise of smartphones, for example, it took merely a year for netbooks to go from the "next big thing" to "who cares?"

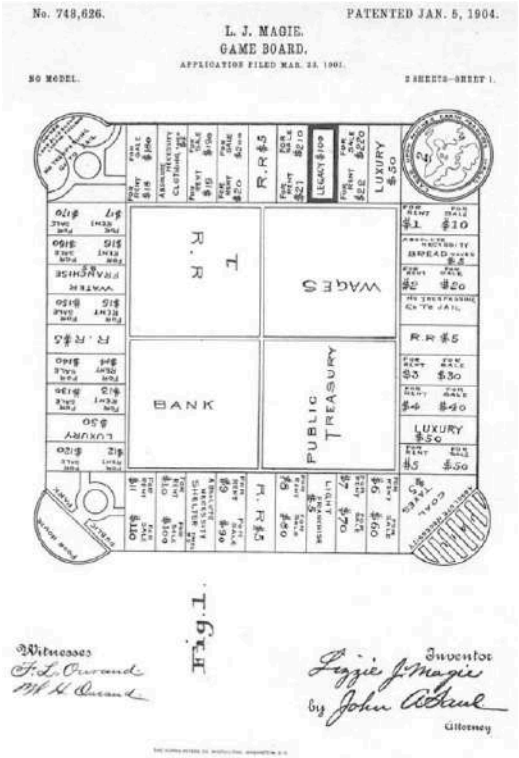


Figure 1.22 The first patent drawing for Lizzie Magie's board game, The Landlord Game. (credit: U.S. National Archives via Wikimedia Commons / Public domain)

The Critical Importance of the Claims

When it comes to filing a full nonprovisional application, the most critical task of the inventor (and patent attorney) is to draft the claims. This is an art in and of itself, one that will determine the inventor's rights and an infringer's liability.

Each claim serves as a stand-alone definition of the patent coverage—as a sort of mini-patent unto itself. After a patent is granted, a claim is the only thing that someone can be accused of infringing. Accordingly, broad claim language is essential if a commercially meaningful patent is to be obtained.

On the other hand, the broader the claim, the more likely it is that prior art may exist somewhere that anticipates the claim or renders it obvious and, therefore, invalidates the claim. So the competent draftsperson submits a dozen or more claims, typically moving from broader to narrower scope, in case the broader claims turn out to be disallowed by the USPTO or later invalidated by a court.

Some applicants make the opposite mistake and draft claims that are too narrow—"a programmable multifunction computer in the shape of a metal clamshell," for example. Such a claim is of little value because others can easily design around it simply by using plastic or other nonmetal materials in the design. Some claims are so narrow they are even referred to as "picture claims" because they paint a literal and limiting picture of the invention. You may get a patent with such picture claims, but it probably won't be worth the paper it's printed on.

The strongest claims usually define powerful functionality. They capture something fundamental or seminal in the functioning of the invention.

A good example is the claims in the aforementioned Amazon one-click patent. The algorithms for "one-click" shopping are not very complicated. Yet the claims capture a very profound functionality—the idea that a user should not have to type in credit card and shipping information every time he or she wants to buy something. The consumer-friendly functionality captured in that patent's claims has won Amazon a lot of customers and

made it a lot of money.

Reviewing the Patent Application

Once the patent application with all necessary forms is filed and all fees are paid, the **patent examiner** will review the patent application to determine if the invention meets the statutory requirements for patentability. The examiner will also conduct a search of patent and other databases to determine if the invention appears to be truly novel and non-obvious. Once a determination has been made, the patent examiner will send the applicant a document known as a **first office action**, in which the patent examiner approves, rejects, or requires additional information about the claims and/or other elements of the application.

If all the claims are allowed, which is rare in a first office action, the patent prosecution process is complete. A more common next step requires the applicant to respond to the patent examiner's rejections and requests for more information. In this response, the applicant will address all of the examiner's concerns and either rebut them or amend the application, typically by revising some or all of the claims.

But according to the Manual of Patenting Examination Procedure (MPEP) Section 1.121, "No amendment may introduce new matter into the disclosure of an application."[li] Thus, an applicant cannot file an application disclosing a new compound and how to make it, and then later, after discovering that the compound's structure and method are incorrect, amend the description.

After responding to the office action by perhaps amending the application, the examination process continues until the patent examiner either allows all of the claims or finally rejects them. If all claims are allowed, then the patent prosecution process is complete. If some claims are finally rejected, then the applicant's options at this point are more limited.

According to MPEP Section 706.07, "In the second or any subsequent examination or consideration by the examiner, the rejection can be made final."[lii] At that point, the applicant must usually choose one of three approaches: Cancel the rejected claims, leaving only allowed claims to issue as a patent; continue the fight by filing what is called a "continuation application" and drafting new claims; or appeal to the Patent Trial and Appeals Board arguing that the patent examiner erred in not allowing the claims.[liii] Any appeal to the Patent Trial and Appeals Board, as with any other office action, must occur within six months.[liv]

Finally, if the patent has been vetted through the patent prosecution process and is ready for issuance, the patent holder must pay the applicable fee. If the applicant pays the issue fee, the USPTO will issue the patent in due course. Additionally, utility patents are subject to maintenance fees. These fees are due 3 years and 6 months, 7 years and 6 months, and 11 years and 6 months from the date of the original patent grant. Plant and design patents are also required to pay maintenance fees.[lv]

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li United States Patent and Trademark Office. (2010, July 21). *Manual of Patent Examining Procedure* § 1.121. Retrieved from http://www.uspto.gov/web/offices/pac/mpep/documents/appxr_1_121.htm

lii United States Patent and Trademark Office. (2010, July 21). *Manual of Patent Examining Procedure* §.0 Retrieved from http://www.uspto.gov/web/offices/pac/mpep/documents/0700_706_07.htm#sect706.07

liii 37 CFR Part 41. Department of Commerce, United States Patent and Trademark Office. (2008). *Rules of practice before the board of patent appeals and interferences in ex parte appeals*. Retrieved from website: http://www.gpo.gov/fdsys/pkg/FR-2008-06-10/pdf/E8-12451.pdf

liv 37 CFR § 1.134

lv 37 CFR § 1.362

Assessment Questions

1. A patent gives an inventor the exclusive right to which of the following?
   A. The ability to profit from their invention.
   B. The ability to prevent others from making, using, offering for sale, or selling the invention.
   C. The ability to prevent others from learning the secrets of the invention.
   D. All of the above.

2. The "bargain" theory, a theoretical justification for patents, argues which of the following?
   A. In exchange for inventing something useful, society gives the inventor the exclusive right to their invention for a limited time.
   B. The product of mental labor should be the property of its creator.
   C. Government negotiates with inventors to determine the value of an invention.
   D. None of the above.

3. Which *two* public policy goals are served by granting patent rights?
   A. By protecting the property rights of inventors, the wellsprings of creation do not dry up for lack of incentive.
   B. Patent rights ensure equal treatment for all.
   C. From each according to their ability, to each according to their need.
   D. The public interest is served by disclosing the details of the invention and thereby promoting the progress of the nation.

4. Through which of the following means do patents also promote knowledge sharing?
   A. To get a patent, inventors must disclose the secrets of their inventions.
   B. Patents represent the world's greatest library of technical knowledge.
   C. Innovators keep up with technical trends by reading other inventors' patents.
   D. All of the above.

5. The Statute of Monopolies in 1624 ended the practice of granting patents for which of the following?
   A. Inventions that were not truly novel.
   B. The Crown's favored inventors.
   C. Trade in staples such as salt or soap rather than for actual inventions.
   D. Inventions that helped industrialists monopolize whole industries.

6. Which of the following practices were common in early patent systems?
   A. Exorbitantly high patent fees.
   B. Limited or no disclosure of the details of the invention.
   C. No examination for patent validity.
   D. All of the above.

7. Early patent systems tended to have which of the following effects on the overall economy?
   A. Innovation was limited to a small sector of the population.
   B. Biased toward incumbent industries, early patent systems did not encourage disruptive change.
   C. Early patent systems reinforced the wealth of elites, not the productive capacity of society.
   D. All of the above.

8. The Founding Fathers created the U.S. patent system with which overarching goal in mind?
A. To defend America's newly won independence.
B. To rapidly stimulate the growth of domestic industry.
C. To create advanced new weapons for America's young army.
D. None of the above.

9. The U.S. patent system was designed to tap the creative and productive potential of which of the following?
A. Their abundant natural resources.
B. Their large stock of imported goods and machinery.
C. Rich agricultural lands.
D. An enterprising population with a "universal ambition to go forward"

10. Which of the following was NOT a unique feature of the U.S. patent system?
A. It was affordable by the common person.
B. It had an examination system to determine patent validity.
C. Patentees were required to make or sell products based on their inventions.
D. It had simplified application procedures.
E. It required full disclosure of the details of the invention.
F. It allowed for the sale and licensing of patent rights.

11. Which of the following is NOT true of the U.S. patent system?
A. Novelty, non-obviousness, and utility determine patent validity, not the identity or business model of the inventor.
B. Patents are freely transferable and tradable property rights.
C. You can't infringe a patent if you honestly don't know that it exists.
D. Patent holders are not required to make or sell products based on their inventions.

12. Compared with the Industrial Revolution, what is the overall patent litigation rate today?
A. It is twice what it used to be.
B. It is about the same as it used to be.
C. It is less than half what it used to be.

13. Historically speaking, patent litigation has served to which of the following?
A. Slow innovation and R&D.
B. Settle disputed rights to new technology so commercialization can proceed.
C. Block others from designing around patents.

14. How many years after the first patent law was signed in 1790 did it take for the United States to surpass Britain in the number of new inventions being patented?
A. 13 years.
B. 75 years.
C. 40 years.
D. 100 years.

15. Historically, in the United States, there have been major surges in new patent filings after which of the following?
A. A sharp increase in patent litigation.
B. New technological advances leading to the birth of new industries.
C. A Supreme Court decision on a major patent case.
D. None of the above.

16. What percentage of entrepreneurs say that patents are vital to securing venture funding?
A. 20 percent.
B. 40 percent.
C. 67 percent.

17. The United States was the only nation to define its greatness in its capacity for which of the following?
A. Economic growth.
B. Military superiority.
C. Bringing freedom to oppressed elsewhere in the world.
D. Technological progress.

18. A patentable invention is a new, novel, and non-obvious machine, manufacture, process, or composition of matter. Which of the four types of inventions categories do these hypothetical mousetrap inventions represent?
A. A mouse ray gun.
B. Exploding mouse glue.
C. A new way to catch mice using sound waves.
D. A mouse-destroying missile.

19. All patentable inventions fall into two broad categories—they are products or processes. Which category do the following fall into?
A. A machine.
B. A means to an end.
C. A composition of matter.
D. A manufacture.

20. Can an idea for a better mousetrap be patented?
A. Yes, so long as you outline the idea in detail.
B. No, you can't patent a mere idea.

21. Which of the following is NOT patentable?
A. Electricity.
B. A random number generator.
C. A device that uses electricity to communicate.

22. When might a software be patentable?
A. If it contains a new, non-obvious, and useful algorithm.
B. If it takes a genuinely-inventive step to either trigger an action, employ a device, or in some other way produce a tangible transformative result.
C. If it records the sale of T-shirts over the Internet.
D. None of the above.

23. Which of the following cases was NOT one of the Supreme Court's "software-eligibility trilogy" of cases?
A. *Gottschalk v. Benson*
B. *Williams & Wilkins v. United States*
C. *Parker v. Flook*
D. *Diamond v. Diehr*

24. Which court case most severely limited software patentability?
A. *State Street Bank v. Signature Financial Group*
B. *In re Bilski*
C. *Mayo Collaborative Services v. Prometheus Laboratories*
D. *Alice v. CLS Bank*

25. What is the so-called "*Alice* paradox"?
A. The highest-value new software products and services are also hardest to patent.
B. You can get software patents, but you can't enforce them.
C. You can only patent software that replicates human activity.
D. None of the above.

26. Patents should only be granted for big revolutionary breakthroughs. True or False?
A. True.
B. False.

27. Which of the following Supreme Court cases held that a naturally occurring DNA segment CANNOT be patented?
A. *Mayo Collaborative Services v. Prometheus Labs., Inc.*
B. *Association for Molecular Pathology v. Myriad Genetics, Inc.*
C. *Nautilus, Inc. v. Biosig Instruments, Inc.*

28. Which of the following is NOT a requirement for patent eligibility?
A. Novel.
B. Revolutionary.
C. Non-obvious.
D. Useful.

29. What does the term "prior art" refer to?
A. Any previous private discussions of an invention or its components.
B. Any previous patent, publication, or public use of an invention.
C. Any previous speculation about an invention.
D. None of the above.

30. If you invent a functioning starship warp drive, *Star Trek* would be considered prior art and your invention would be ineligible for a patent. True or False?
A. True.
B. False.

31. To meet the requirement for utility, which of the following must an invention do?
A. Work or function as intended.
B. Be of some benefit to society.
C. Be a worthwhile product, process, or composition of matter.
D. All of the above.

32. Why would combining a camera with a cell phone in a smartphone pass the test for non-obviousness, whereas putting wheels from a chair onto an office cart would not?
A. The technology in a smartphone is much more complicated.
B. Putting wheels from a chair onto a cart is less difficult.
C. Combining a camera and a cell phone produced an unexpected result.

33. Of the three criteria for patenting, which is the most difficult to surmount?
A. Utility.
B. Novelty.
C. Non-obviousness.

34. For which of the following are plant patents granted?
A. Bioengineered plants.
B. Naturally grown plants that are distinctively different.
C. Plants that are asexually cultivated, not grown from seeds.
D. All of the above.

35. What are the three patentability criteria for plant patents?
A. Novelty, utility, and non-obviousness.
B. Novelty, distinctiveness, and non-obviousness.
C. Novelty, beauty, and non-obviousness.

36. What are design patents granted for?
A. Functional designs for manufactured items, like the shape of a chair.
B. Ornamental designs for items of manufacture, like the fabric design of a chair.
C. All of the above.

37. What are the three patentability criteria for a design patent?
A. Novelty, utility, and non-obviousness.
B. Novelty, beauty, and non-obviousness.
C. Novelty, ornamentality, and non-obviousness.

38. By what percentage are filing fees reduced if the applicant is on of the following:
A. Universities, non-profits, and small businesses with fewer than 500 employees.
B. Those with gross income less than three times U.S. median household income or meet other certain critera.

39. What is the advantage of a provisional patent application, which lasts only one year?
A. It is less expensive.
B. It is not subject to examination.
C. It grants an early filing date while the inventor continues working on the invention.
D. All of the above.

40. What is the main disadvantage of a provisional patent application?
A. It reserves an early filing date for a later, nonprovisional application.
B. The claims in a later, nonprovisional application must be completely consistent with the early description contained in the provisional application.
C. The provisional patent only contains the specifications, and drawings, if any.
D. All of the above.

41. What is the most critical part of a patent application that determines both the inventor's rights and an infringer's liability?
A. The claims.
B. The specification.
C. The drawings.
D. The abstract.

42. Which of the following is the best strategy in drafting claims in a patent application?
   A. Draft them as broadly as possible, to cover every possible use of the invention.
   B. Draft them as narrowly as possible, so the examiner won't reject them.
   C. Draft them as broadly as the specifications and the prior art allows, then back up those broad claims with successively narrower claims as backup.

43. In a "first office action," the examiner usually does which of the following?
   A. Allows all the claims in the patent application.
   B. Rejects some claims and/or requests further information.
   C. Rejects the entire application.

44. In a second or subsequent examination, if the examiner finally rejects some or all of the claims, what can the applicant do at that point?
   A. Cancel the rejected claims, leaving only allowed claims.
   B. File what's called a "continuation application."
   C. Appeal to the Patent Trial and Appeal Board.
   D. All of the above.

2

Patent Enforcement

Figure 2.1 (credit: modification of work “Lee County Courthouse, Giddings, Texas 1805081201” by Patrick Feller/rights holder/flikr.com, CC BY 2.0)

Chapter Outline

Introduction

2.1 The Right to Enforce Patents

Figure 2.2 The statue of Blind Justice in front of the Albert V. Bryan United States Courthouse in Alexandria, Virginia. (credit: Tim Evanson via flickr / CC BY 2.0)

Learning Objectives

After completing this section, you will be able to

- Understand the basic rights of patent owners.
- Gain an appreciation of the complex process of patent litigation.

Patents issued by the United States Patent and Trademark Office (USPTO) can be enforced by their owners in U.S. federal courts. The USPTO is responsible only for examining and issuing patents—it does not enforce them. It is up to the owner of the patent to enforce it against infringers by filing a civil case in federal court for patent infringement.

A patent owner is called the "patentee." The patentee has the statutory right to exclude others from making, using, offering for sale, selling, or importing the invention covered by the patent throughout the United States.[i] ecall that these are rights to exclude others from using the patentee's invention. The Patent Act does not grant the patent owner the right to practice the invention covered by the patent. Indeed, it may be that the invention, if practiced in the United States, could infringe someone else's patent! For example, if you obtain a patent on an improvement to a patented product (e.g., a faster-acting version of a patented painkiller), you might not be able to sell the improved product unless you obtain a license under the patent for the underlying product.

i 35 U.S.C. §154(a)(1).

Infringement is a **strict liability violation**—you do not need to know that you are infringing a patent, or that a patent even exists, to be liable for patent infringement. If someone makes, uses, offers for sale, sells, or imports what is covered by a claim of a valid patent, that person is an infringer. Neither lack of knowledge of the patent, nor lack of intent to infringe it, is a defense to patent infringement. [ii]

Enforcing a patent is almost invariably a long and expensive process. The first step is to decide whether someone is infringing your patent—i.e., making, using, selling, offering to sell, or importing your invention without your permission. To decide whether someone is infringing your patent, the elements of each claim of the patent must be compared with the elements of the potential infringer's device or process. If the elements of a patent claim match (or "read on") the elements of the device or process, an infringement has occurred.

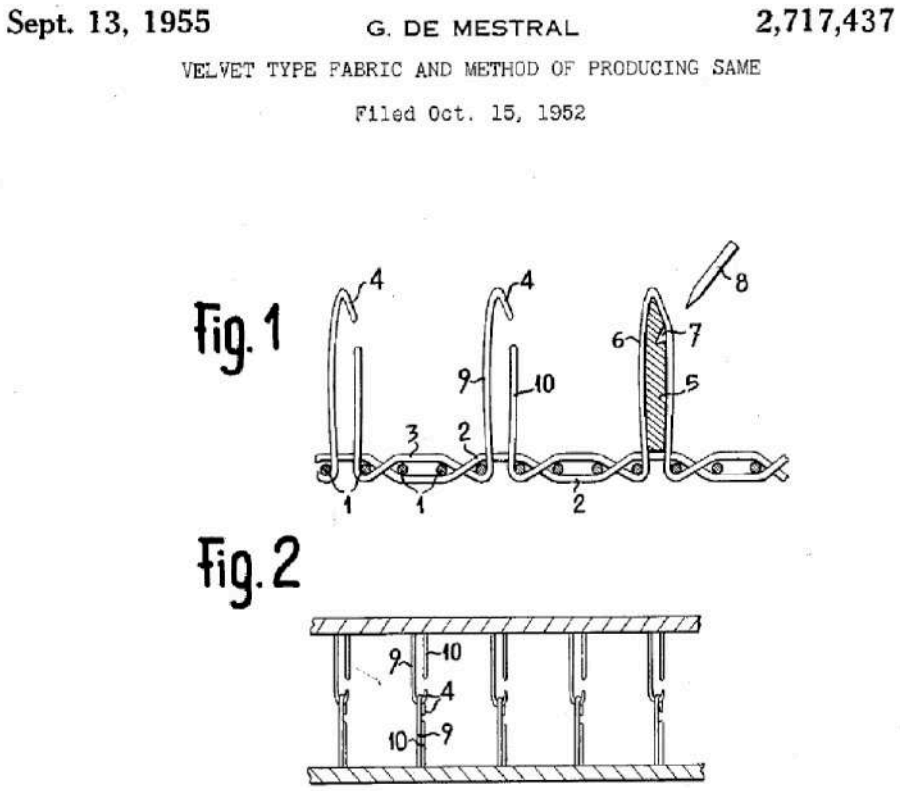

Figure 2.3 Patent for velvet type fabric and method of producing same (credit: USPTO doc ID 02717437 /)

Even if some elements of a claim do not literally read on the infringing device, but are sufficiently equivalent in what the device does and how the device does it, they may nevertheless be infringed under the legal rule called the "**doctrine of equivalents**."This doctrine prevents an infringer from copying the essence of the invention, but making insignificant modifications in an effort to avoid infringement. If the accused device or process performs substantially the same function in substantially the same way and yields substantially the same result, infringement exists so long as any differences between the claim elements and the accused device are not substantial. A patent calling for an "adhesive" connection (describing glue as the preferred adhesive) could be infringed by a device using a hook-and-loop fastener(e.g.,Velcro). That's because the hook-and-loop fastener arguably performs substantially the same adhesive function in substantially the same way and with substantially the same result as the glue adhesive.

ii 35 U.S.C. §271(a). An exception, where lack of knowledge may be a defense, is indirect infringement, of which there are two principal types: (1) actively inducing someone else to infringe, which requires knowledge of the patent and an intent to cause the infringement (35 U.S.C. §271(b)), and (2) contributing to someone else's infringement, which requires selling or offering for sale a component to a patented combination knowing that it is specially made or adapted for use as a material part of an infringing combination and that it is not suitable for substantial noninfringing use. 35 U.S.C. §271(c).

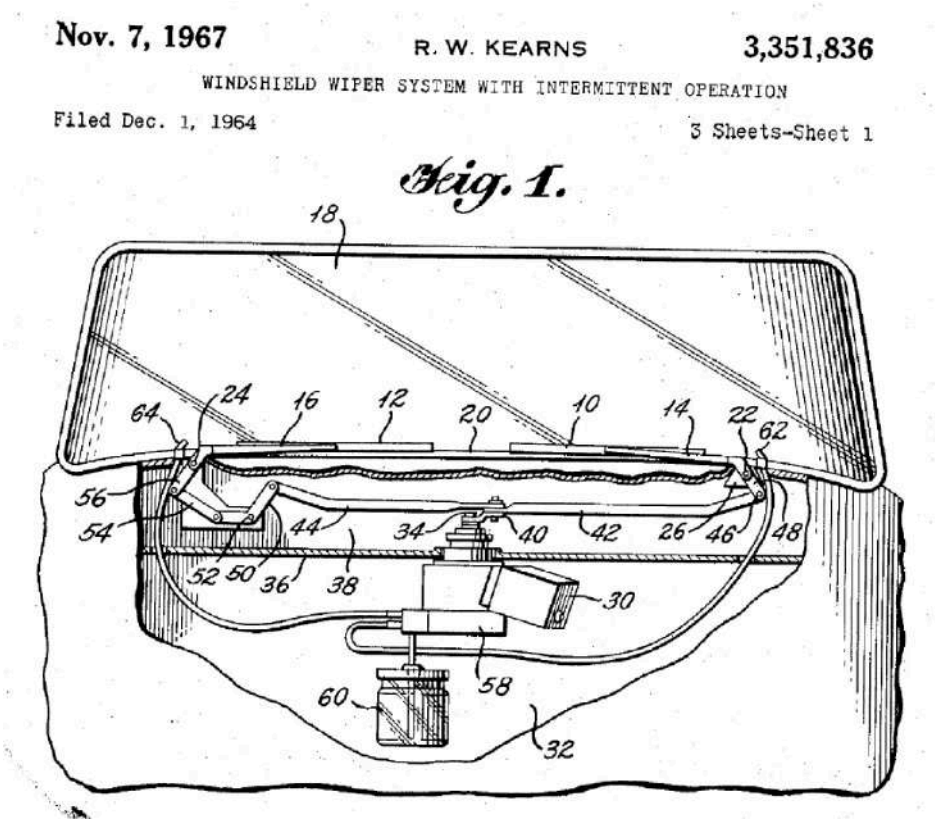

Figure 2.4 Patent for windshield wiper system with intermittent operation. (credit: USPTO doc ID 03351836 /)

If a patent owner believes their patents are being infringed, the person typically hires a patent trial lawyer who specializes in enforcing patents. Often, but not always, this is a different person at a different law firm than the lawyer or agent who previously assisted the inventor(s) in obtaining a patent from the USPTO. Once the patent trial lawyer is retained, that lawyer will evaluate the patent and the accused device or process, and will provide the patentee a legal opinion about whether or not an infringement exists. If an infringement is found, the patentee then must decide how to proceed. Several options exist.

Options for Pursuing a Patent Infringement Claim

- Demand that the alleged infringer stop infringing, and pay damages for past infringement.
- Offer the alleged infringer a license to practice your invention for money, called a "**royalty**."
- Ignore the infringement, or postpone any action for a time.
- File a patent infringement lawsuit in federal court against the alleged infringer.

Each option has benefits and risks, which should be carefully considered before proceeding.

2.2 Deciding Whether and How to Enforce a Patent

Figure 2.5 (credit: Phtograph by Kārlis Dambrāns via flickr / CC BY 2.0)

Learning Objectives

After completing this section, you will be able to

- Understand the variety of options one has in enforcing patent rights.
- Appreciate the time and expense involved in doing so.

The decision of how to proceed depends on the patentee's objectives and a clear understanding of the risks and rewards of each potential course of action. If you do not know your objectives, you cannot decide on a course of action to achieve them.

For example, if your goal is to stop a competitor from offering a competing product that infringes your patent, you have little choice but to file a lawsuit and pursue it to completion. This can easily cost from $1 million to over $10 million, depending upon the complexity of the case and the intensity of the defense. If you do not have the resources to pursue such expensive litigation on your own, there are contingency fee lawyers, who may be willing to take your case in return for a share of any damages (typically 30 to 40+ percent) that are collected from the infringer. As of 2014, a wide variety of litigation finance firms exist that may be willing to fund your litigation in return for a share of any damage award or settlement payment you receive.[iii]

However, if your goal is to obtain a royalty for the use of your invention, you may be able to negotiate a license agreement without the need for litigation. Even if the infringer balks at an agreement unless you initiate a lawsuit, often the lawsuit can be settled via a license agreement short of trial. About 95 percent of patent lawsuits settle before trial, many with the defendant(s) taking a license for which they pay a royalty.[iv]

iii See, e.g., http://www.tennessean.com/story/money/2014/05/20/lawsuit-financingcarves-niche/9306059/ and http://www.patentlitigationfunding.com/litigation-funding.

Even small entities and individuals can successfully license a patent without filing a lawsuit if they have a good patent and a reasonable licensing plan. Most prospective licensees know that lawsuits are very expensive and would prefer to settle a dispute with a license rather than fight a lawsuit and end up taking a license later. The key is to have a plan, and implement it diligently, with good counsel supporting the effort.

Thus, the first step in deciding if and how you will enforce your patent is deciding what you want to achieve and how much effort, and money, you are willing to devote to the endeavor. The "costs" of enforcement are not limited to the out-of-pocket expenses for lawyers and litigation expenses. Any enforcement effort requires the time and attention of the patentee, whether an individual or company, which disrupts normal business activities. The time and attention required includes providing information and documents, reviewing pleadings prepared by your lawyers, analyzing information received from your opponent during the litigation, appearing for depositions and other pretrial proceedings, and appearing at trial. Just the information and document gathering can consume hundreds, even thousands, of person hours and disrupt the normal operations of virtually every part of an organization.

Enforcing a patent also takes time. Lawsuits typically take two to four years to reach trial. Post-trial proceedings can take another six months to a year, and appeals take several additional years before the lawsuit is "finished."

On the positive side, successful patentees can reap huge monetary damages for another's patent infringement, including lost profits, treble damages (i.e., triple the amount of money damages found), and, in exceptional cases, an award of the patentee's attorneys' fees. Awards of tens to hundreds of millions, and occasionally even billions, of dollars can be achieved, even if they are not typical. If you sell a product or service and are asserting your patent against a competitor, you can also obtain an injunction barring your competitor from continuing its infringement. This can reap huge additional rewards, measured in increased market share and pricing power.

Patents not only offer patentees the opportunity to play offense in the marketplace, but also provide a very potent defense against charges of infringement (or other claims) by others. Competitors are wary of attacking businesses with extensive patent portfolios. The recent "smartphone wars" are a timely example. After becoming embroiled in patent litigation with Apple and Oracle over its Android operating system and the phones that use it, Google spent $12.5 billion to acquire Motorola Mobility in August 2011 to gain access to its extensive patent portfolio so that it would have patent weapons of its own.[v] Google also acquired 1,023 more patents from IBM for an undisclosed amount around the same time.[vi] Perhaps this was also partly in response to Apple joining with BlackBerry maker Research In Motion (RIM), Microsoft, Ericsson, Sony, and EMC to buy 6,000 patents owned by Nortel for $4.5 billion in July 2011, largely to keep them from falling into the hands of competitors like Google and Samsung.[vii]

Expert assistance in making the decision to enforce your patent, and to map out the "who, what, where, when, and how" of doing so, is critically important. A variety of lawyers and law firms specialize in patent trials, from solo practitioners to multinational law firms. The choice depends on your needs, means, and objectives.

iv Jay P. Kesan and Gwendolyn G. Ball, How Are Patent Cases Resolved? An Empirical Examination of the Adjudication and Settlement of Patent Disputes, 84 Wash. U. L. Rev. 237, 254 (2006). Available at: http://digitalcommons.law.wustl.edu/lawreview/vol84/iss2/1

v http://techcrunch.com/2011/08/15/breakinggoogle-buys-motorola-for-12-5-billion/

vi http://www.bloomberg.com/news/2011-09-14/google-purchases-1-023-patents-from-ibm-tobolster-portfolio.html.

vii http://gadgets.ndtv.com/apple/news/apple-ledgroup-buys-nortel-patents-for-4-5-bn-225830.

2.3 Patent Litigation

Figure 2.6 (credit: Photograph by Karen Neoh via flickr / CC BY 2.0)

Learning Objectives

After completing this section, you will be able to

- Understand the pros and cons in deciding who, what, where, when, and how to sue an infringer.

Once a decision is made to enforce a patent via litigation, a complex series of steps begins that determine the "who, what, where, when, and how" of events that will unfold.

Who

First you decide whom to sue. Many options may exist. If the infringer is a corporation, you can sue it. But you can also sue its owners and/or officers if it is a closely held company or is dominated by a single shareholder or manager. If the infringer has subsidiaries, you must choose which of them to include as defendants. Recall that your patent gives you the right to exclude others from making, using, selling, offering for sale, or importing your invention in the territory the patent covers. (We will assume for simplicity that you own a U.S. patent; foreign patents can be obtained in other countries and enforcement of those foreign patents is subject to their local laws.) Any person or entity that violates one of these exclusive rights is a potential defendant.

Strategic issues should be considered in deciding whom to sue. For example, the location of one or more defendants may make it hard to include them in a lawsuit filed in a place ("forum") convenient to you. Although the infringer's customers are also infringers (i.e., they "use" the infringing product or service), most patentees disfavor suing customers because these are also the patentee's customers or potential customers—and suing them may be bad for business. Often, the manufacturer or seller of the infringing product or service indemnifies and defends its customers. In other words, in many cases the manufacturer or seller of a product will agree to "cover" its customers in the event of a patent infringement claim. So, if the infringing manufacturer and/or seller is already a defendant, you gain little by suing customers, except their

ire! Thus, select your defendants carefully, with your desired end result in mind.

Another strategic decision, when more than one infringer exists, is whether to sue them one at a time or collectively.[viii] Common sense might suggest suing them one at a time, to avoid having them gang up on you. But experience shows that suing multiple defendants simultaneously is often a better strategy. It turns out that, in many cases, rather than encouraging them to gang up on you, they spend most of their energy trying to sort out differences among themselves and trying to present a united front.

Although the America Invents Act narrowed the joinder rule in patent cases beginning in September, 2011 to cases where a plaintiff can show a "common question of law or fact" as well as a true "transaction or occurrence" between the defendants (which must be more than infringement of the same patent), judges still typically consolidate separate cases involving the same patent for their own convenience in handling discovery and pre-trial issues. Thus, proceeding simultaneously against multiple defendants can still be an effective strategy.

What

Which patents (if you have more than one) and which claims of those patents you assert in a lawsuit is another important decision you must make. Twenty years ago, you could simply file a lawsuit against an alleged infringer, listing your patent(s) and little more. You could defer deciding which claims to assert against which allegedly infringing products or services until after you received information from the defendant(s) through discovery in the litigation. However, courts now routinely require that you provide details in the **complaint** you file, or shortly after, about which patent claims are asserted against which product or service, and also that you provide a "claim chart" that details those assertions precisely. Although it is possible to revise these assertions after receiving more information during the discovery process, your initial assertions remain in the court's record and can come back to haunt you if they are not consistent with your revised assertions. Therefore, careful pre-filing investigation and analysis is crucial to a successful pursuit of the infringers.

Ideally, hire not only an experienced patent trial lawyer to guide this effort, but also the experts you will rely on in the litigation, and who will testify during the trial on how and why the accused products or services infringe your patent(s). Experts can provide essential evidence of the infringement during the trial. Good experts are critical to success in litigation, as much as experienced trial lawyers, but are sometimes surprisingly hard to find. First, you must find an expert who is neutral, or at least appears so. Most experts are employed in the same field as the patentee and the alleged infringer, making them potentially unsuitable candidates because they have allegiances to existing companies that suggest the possibility of bias. Second, a good expert must not only know their subject thoroughly, but also be able to communicate it to a lay audience (i.e., the nonexpert judge and jury). Such communication skills are not always found in experts with strong technical credentials. Finally, you want an expert who has the right skills, but not one who appears to be a hired gun (exemplified by someone who spends most of their time testifying for a fee).

Thus, prepare in advance, and hire experts early in the process, both to assist your preparations and to remain available during the progress of the lawsuit and for trial.

Where

The selection of where to file is an important, perhaps determinative, decision. As we have noted, patent infringement cases seeking damages can only be filed in U.S. federal courts (as opposed to state courts). If your defendant is a private party, the proper location for the case (called "**venue**") is the federal district court in the geographic location where the defendant is incorporated or resides, or where the claim arose.[ix]

viii Prior to the America Invents Act (AIA) in 2011, joinder rules allowed you to sue multiple infringers in the same lawsuit, even if their products were different. The AIA limited this ability by restricting joinder. Nevertheless, you can still file a separate lawsuit against each alleged infringer, and ask the court to consolidate them for discovery and other pretrial purposes. Courts are usually eager to do this because it simplifies their work. The practical effect is almost the same as a single case with multiple defendants.

The first two criteria are usually easily determined—i.e., a company's state of incorporation is a matter of public record, as are the places where it has facilities. The place where the claim arose includes every place the infringing product or service is made, sold, offered for sale, used, or imported. If it is a low volume product or service, or is very new or lightly distributed, the proper venues may be quite limited. But typically products or services with enough sales to justify a multimillion dollar patent infringement lawsuit are broadly available throughout the country, opening up virtually any federal court as a possible venue.

Thus, you can, and should, select a venue that meets your objectives as closely as possible. Some venues (e.g., the Eastern District of Virginia and the Western District of Wisconsin) have reputations (and rules) for moving cases through to trial very quickly, often in less than a year. Speed is desirable in terms of reaching a conclusion quickly, but has its downsides in terms of accelerated costs and maximum disruption to the normal business operations of you and your opponent. Other districts exhibit much slower progress toward trial, which may be desirable or undesirable in meeting your particular objectives.

Another factor is experience. Some district courts have handled many complex patent cases, have detailed rules about what must be done to get the case ready for trial, and an excellent track record on appeal. Still other districts have reputations for being "plaintiff friendly" or "defendant friendly," although these reputations are often more "urban legend" than accurate. In any given case, the outcome is dependent on the parties, the facts, the lawyers, and the judge/jury assigned.

Experienced patent trial counsel can assist you in making an appropriate choice of venue for your case, taking into account the myriad factors pertinent to your case.

When

The timing of filing suit is often dictated by when you discover the existence of the infringement and have gathered the required information for drafting a complaint and the necessary initial disclosures. But other considerations may be relevant also, such as the timing of industry trade shows, holiday sales pushes, or the financing activities of your opponent. Absent any other constraints or objectives, lawsuits should usually be filed as soon after the infringing activity is discovered as possible, given the need to investigate and prepare before filing a complaint.

At the outside, any suit filed more than six years after the infringement began and was reasonably capable of being discovered can give rise to a defense of "**laches**" and/or "**estoppel**"by your opponent. In other words,the accused infringer is arguing that you waited too long to bring your infringement claim. It may be necessary for you to prove that the defendant was not prejudiced by your delay. If laches applies, which simply means you waited an unreasonable time tomake your claim, prejudicing your opponent, your damages will be limited to those that arise after you filed your lawsuit. If estoppel applies, which means that you not only delayed, but affirmatively misled your opponent into believing you would not file suit, your claim is barred altogether.

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ix If the alleged infringer is the federal government itself, or a government contractor, the proper venue is the Court of Federal Claims. 28 U.S.C. §1491 Another forum for enforcing a U.S. patent against imported goods exists at the U.S. International Trade Commission (ITC) in Washington, D.C. 19 U.S.C. §1330. The ITC has the power to investigate alleged infringement and bar goods found to infringe from entering the country. This can be a very effective tool against infringing imports, especially if all the sources of those imports are unknown. The ITC's jurisdiction is "quasi in rem" so that the infringing goods themselves provide the basis for jurisdiction, allowing their adjudication and prohibition even if the source of the goods is unknown. Proceedings before the ITC are extremely expedited, usually taking 18 months or less, and can be very expensive.

Another issue you face is whether to notify the alleged infringer before filing suit. This seems prudent—demand that the infringer cease the infringement before filing a lawsuit aimed at enforcing such cessation. But such a strategy is fraught with pitfalls. First, accusing someone of infringement allows them to sue you preemptively, asking the court for a quick decision that no infringement exists. This type of judicial decision is called a declaratory judgment of noninfringement.[x] If the accused infringer sues you before you sue them, the accused infringer becomes the plaintiff and can sue in a forum of their choice. Ceding to your opponent the initiative and the choice of forum for the litigation is a strategic blunder that could cost you not just that battle, but the war. Second, an old adage applies here: If you are going to kick someone, don't warn them, because they will prepare to deflect the blow. Patent litigation (like all litigation) is like war, albeit civilized war. Ceding to your opponent important strategic advantages, such as the choice of forum and the element of surprise, is costly and can be fatal.

So, do these considerations dictate that you ambush your opponent and appear to be unreasonable by suing without notice? No, a middle ground does exist. Consider filing the lawsuit simultaneously with, or immediately after, making a demand that the infringer cease the infringing activities. You can defer formally "serving" the lawsuit on your opponent (that is, providing notice by delivering the complaint) for at least 30 days, and as long as 90 days in some courts. This allows you to negotiate with your opponent from a position of strength and with your choice of forum firmly established, without appearing unreasonable.

How

Once you choose to file suit in federal court, the how is largely dictated by the Federal Rules of Civil Procedure, the Federal Rules of Evidence, and the loal rules of the chosen venue. However, one important decision remains-judge or jury.[xi] Until the 1990s, almost all patent cases were tried to a judge because they were thought to be too complex for juries. but then some enterprising plaintiffs' lawyers decided to request that a jury decide their case, perhaps seeking to take advantage of the complexity of the cases and the belief that juries trust patents because they are issued by the federal government after examination by USPTO experts. That has led to the current reality, which is that almost all patent cases filed now request a jury trial. Interestingly, statistics show that this trend does not always benefit plaintiffs. Depending on the venue, plaintiffs only win 60 to 75 percent of the time, despite having the advantage of being able to pick what cases they file (presumably they self-select only the strongest cases) and where they file them (i.e., they can select what they think is the most favorable forum—often their own hometown).[xii] Of course, the outcome of a particular case depends on a myriad of factors unique to that case. No party can be assured victory when a jury is involved.

x 28 U.S.C. § 2201(a); See *MedImmune, Inc. v. Genentech, Inc.*, 127 S.Ct. 764 (2007) and *SanDisk Corp. v. STMicroelectronics, Inc.*, 480 F.3d 1372 (Fed. Cir. 2007).

xi See Rules 38-39, Fed. R. Civ. P.

xii PricewaterhouseCoopers, 2013 Patent Litigation Study, at 9; https://www.pwc.com/us/en/forensicservices/publications/assets/2012-patentlitigation-study.html.

2.4 Getting Started

Figure 2.7 (credit: Photograph by Mark Fischer via flickr / CC BY 2.0)

Learning Objectives

After completing this section, you will be able to

- Understand the various pretrial motions available to parties in a litigation.

Once the decision to file suit is made, and all the factors noted above are considered, the complaint is filed in the clerks' office of the selected federal court and served in due course on the defendant(s).[xiii] The defendant(s) must then decide whether to move to dismiss or transfer the case to a different venue, or file an answer (a response to the infringement claim).[xiv] The defendant(s) can also file a counterclaim, asserting claims back against the plaintiff.[xv] Motions to dismiss may be based on any number of issues—improper jurisdiction (e.g., the court does not have power over the defendant because it does not reside or do business within the geographic jurisdiction of that court), improper venue (e.g., the defendant does not reside or did not commit any act of infringement in the jurisdiction of the court), failure to state a proper claim, etc.[xvi] Such a motion must be accompanied by a legal brief explaining the reasons for the motion, to which the plaintiff can file an opposing brief. The defendant who filed the motion usually has an opportunity to file a reply brief. After the briefing is completed, which can take one to two months, the court will decide the motion with an order, either granting or denying it.

xiii See Rules 3-5, and 7-8, Fed. R. Civ. P.

xiv See Rules 7-8, and 12, Fed. R. Civ. P.

xv See Rule 13, Fed. R. Civ. P.

xvi See Rule 12(b), Fed. R. Civ. P.

Motions to transfer can be filed by a defendant who believes another court would be a "better" place to proceed with the case.[xvii] The factors considered by the court as to whether it or another court is "better" include which court is most convenient in terms of the location of necessary witnesses and/or documents, and whether another court already has experience with the subject matter because a related case is pending or was handled there and it can handle the new case more efficiently. Such motions usually fail, but can delay the progress of the case by several months, sometimes longer, while the court considers how to rule on the motion. The parties must present detailed arguments about why the case should be moved, or not, and often the court will order oral argument during which each party can present its position and answer questions the court may have.

If no motions are filed by the defendant(s), or if they are denied, the defendant(s) must file an answer, which responds to the allegations in the complaint and sets forth any defenses the defendant(s) may have.[xviii] Such defenses can include that the patent is not infringed, that the patent is invalid, that the defendant has a license, that the plaintiff waited too long to file suit (laches) or misled the defendant into believing he or she would not complain about the alleged infringement (estoppel), that the alleged infringer is entitled to prior user rights,[xix] or myriad other defenses that may be available.[xx]

The defendant(s) may also file one or more **counterclaims**, which are essentially new charges filed against the plaintiff.[xxi] If such counterclaims are related to the subject matter of the initial case, they may be tried at the same time. If not, they may be severed and tried separately, either before or after the initial case.

The plaintiff has an opportunity to file a reply to the answer and an answer to any counterclaim that the defendant(s) file.[xxii] If a counterclaim is filed, followed by an answer, then the defendant(s) can file a reply to the plaintiff's answer.[xxiii]

Once these initial pleadings are filed, which usually takes about 60 days from when the initial complaint is filed, the case is considered "at issue" and the pretrial proceedings commence.

Defendants in patent cases are increasingly turning to a strategy of filing requests for **post-grant review** in the PTO to derail a patentee's efforts to enforce the patent. Although beyond the scope of this chapter, a post-grant review essentially asks the PTO to take another look at whether the patent is valid, i.e., whether it should have been granted in the first place. The requestor of any post-grant review must present supporting evidence to show that some issue renders one or more of the patent's claims invalid. The post-grant review request can be either **ex parte reexamination** (meaning the patentee does not get to participate) or **inter partes review** (in which the patentee is allowed to participate), or **covered business methods review** (to review patents that claim a method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or service). Complex rules govern these proceedings, and they changed in 2011 under the **America Invents Act (AIA)**, which substantially revised the nation's patent laws in a number of important ways.[xxiv]

The significance to a patentee of an opponent requesting post-grant review is twofold. First, the patentee risks losing its patent if the PTO finds it is invalid, and this is exactly what has happened in a majority of *inter partes*

xvii See 28 U.S.C. §1404(a)

xviii See Rules 8-9, Fed. R. Civ. P.

xix 35 U.S.C §273, which provides a defense to patent infringement for someone who can prove, by clear and convincing evidence, that they acted in good faith and commercially used the subject matter of the patent in the U.S. at least one year before the effective filing date of the patent or the invention's first public disclosure.

xx See Rules 8-9, and 12, Fed. R. Civ. P.

xxi See Rule 13, Fed. R. Civ. P.

xxii See Rule 7, Fed. R. Civ. P.

xxiii See Rules 8 and 13, Fed. R. Civ. P.

xxiv See the PTO's discussion of the AIA at http://www.uspto.gov/aia_implementation/index.jsp.

review hearings as of March, 2016. Second, a defendant requesting post-grant review usually asks the court to **stay** (i.e., temporarily suspend) the patent case filed against it while the PTO evaluates the patent, arguing that the result of the PTO's actions may either invalidate or modify the patent such that the court should await the outcome before proceeding with the litigation. This strategy has been successful in many courts.

2.5 Pretrial Procedures

Figure 2.8 (credit: Photograph by Nelson Runkle via flickr / CC BY 2.0)

Learning Objectives

After completing this section, you will be able to

- Understand the multiple procedures involved in the pretrial phase of patent litigation.
- Appreciate the costs involved and the ways they affect the ultimate trial outcome.

The first steps in the pretrial procedure are the filing by the parties of their "initial disclosures" and the holding of the preliminary pretrial conference.[xxv] Initial disclosures must provide preliminary information about each party's positions in the case, and disclose the identity and location of witnesses and documents likely to be relevant to the issues in the case.[xxvi] These disclosures help frame the "discovery," or information that the parties can request of each other, which is one of the hallmarks of litigation in the United States and one of the drivers of the expense of litigation. The concept is laudable—require each party to disclose the information it has relevant to the case to preclude a "trial by ambush." But, in practice, discovery can become an endless game of cat and mouse, with costs escalating exponentially. We will talk more about discovery shortly.

The preliminary pretrial conference is usually the first time the parties appear in court before the judge, unless there has been a hearing on a pretrial motion (as discussed above). At this conference, the judge discusses with the parties the issues likely to arise in the case, the time that pretrial discovery is expected to take, and

xxv See Rules 12, 16, and 26, Fed. R. Civ. P.

xxvi See Rule 26(a), Fed. R. Civ. P.

any issues that make the case unique (such as witnesses in foreign countries that require extraordinary means to obtain their testimony for trial). Each party is usually required to submit a report to the court in advance of this conference, proposing what the timeline for the case should be and identifying any unique issues. The court typically issues a **scheduling order** at, or shortly after, the pretrial conference, specifying dates by which certain activities must be concluded. This order often "splits the baby" between the plaintiff's and defendant's proposed schedules (the plaintiff usually seeks speed while the defendant usually seeks delay). The figure below shows a typical scheduling order.

The scheduling order will also usually specify a length of the trial (e.g., 8 trial days), subject to revision at the final pretrial conference. A typical patent trial is scheduled to last from 5 to 20 trial days, but some can take much longer. Let's look at each step of this schedule to understand what is happening.

Protective Order

Before information is shared between the parties, they usually agree on a protective order, which they will ask the court to enter, that specifies who has access to the confidential information produced during discovery in the litigation.[xxvii] This is important to all parties, and even third parties that may be asked to produce information during discovery, because sensitive business, technical, and financial information is routinely requested by and produced to each party during the lawsuit. The protective order proscribes that the disclosure of confidential information during discovery is limited to lawyers involved in handling the case, outside experts retained by the lawyers to assist them, and court reporters (who record testimony during the case), videographers (who videotape deposition testimony, as is now common), and court personnel. It is also typical that certain employees of each party (usually in-house lawyers and/or business people directly involved in the oversight of the case) are also permitted to review certain materials, but not financial information of a competitor or future business plans, which are usually excluded from being disclosed to any party employees.

Everyone authorized to see confidential information is under court order to restrict use of the information to the pending lawsuit, not to disclose it to anyone not authorized by the protective order to see it, and requiring that all copies be returned or destroyed at the end of the case.

Discovery

After the preliminary pretrial conference, discovery begins, which results in the exchange of documents, written responses, and witness testimony.[xxviii]

A request for production allows a party to demand that another party turn over relevant documents and electronically stored information in its possession or control, as well as an inspection of property (such as a manufacturing facility) to take photographs, measurements, and the like.[xxix] Documents and other tangible items can also be requested from third parties (i.e., people and entities not named as a party in the lawsuit) via subpoena.[xxx]

xxvii See Rule 26(c), Fed. R. Civ. P.

xxviii See Rules 26-37, Fed. R. Civ. P.

xxix See Rule 34, Fed. R. Civ. P.

xxx See Rule 45, Fed. R. Civ. P.

Interrogatories are written questions that a party can ask of other parties in the litigation, but not of third parties. Such questions can request any nonprivileged information that is relevant to any party's claim or defense—including the existence, description, nature, custody, condition, and location of any documents or other tangible things and the identity and location of persons who know of any discoverable information that may be relevant to the subject matter of the litigation.[xxxi] Interrogatories may also ask for opinions or the legal contentions of another party. The initial limit on the number of interrogatories is 25, including subparts. However, upon a showing of good cause, courts routinely permit additional interrogatories in patent litigation because the issues are usually complex.[xxxii] Answers to interrogatories are binding on the party providing them and may be used as admissions in the litigation, including at trial.

Depositions are interviews used to elicit testimony from witnesses having relevant knowledge.[xxxiii] This is similar to eliciting testimony during a trial, but occurs in a conference room with a court reporter present to record what is said. The judge is not present at depositions, but may intervene if a controversy arises. Testimony can also be requested by written questions to a witness, which the witness then answers and returns to the requesting party, called a deposition by written questions.[xxxiv]

Although in the United States, it is usually required that testimony at trial be presented live, with the opportunity for the opposing party to cross-examine the witness and for the jury and/or judge to assess each witness's demeanor in person, testimony elicited via depositions during discovery may be used at trial under certain circumstances.[xxxv] For example, if a witness dies before trial, or is unavailable through no fault of the party seeking to use the deposition testimony, the deposition may be used as testimony at trial in lieu of live testimony from the witness. Also, the deposition testimony of an opposing party or an officer or manager of the opposing party corporation may be used at trial for any purpose. Usually, however, deposition testimony is used primarily to "impeach" a witness testifying live at trial—that is, to show that the witness at trial has changed prior testimony from when they gave the deposition. Videotaped deposition testimony is very effective to show to a judge or jury during trial that the witness has changed the testimony—such as from "No" to "Yes" or the equivalent!

The parties can also demand that another party admit, for purposes of the pending litigation only, the truth of any facts, opinions, or conclusions, or the genuineness of any documents relevant to any party's claim or defense. Such demands are called requests for admission.[xxxvi] The responses to these demands are binding on the responding party and can be used to conclusively establish the matters admitted in the litigation, including at trial.

Amendments to the Pleadings

Once initial information is obtained via discovery, the parties may be permitted to amend or supplement their pleadings (i.e., the complaint, answer, counterclaim, etc.) to address information or issues uncovered during the initial discovery.[xxxvii] For example, the plaintiff may uncover information about other companies, products, or services involved in the infringement and seek to add them to the lawsuit. A defendant may uncover information about invalidity defenses not previously known to it and want to add those to its answer.

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xxxi See Rules 26(b) and 33(a)(2), Fed. R. Civ. P.

xxxii See Rule 33(a), Fed, R. Civ. P.

xxxiii See Rules 27-30, Fed. R. Civ. P.

xxxiv See Rule 31, Fed. R. Civ. P.

xxxv See Rule 32, Fed. R. Civ. P.

xxxvi See Rule 36, Fed. R. Civ. P.

xxxvii See Rule 15, Fed. R. Civ. P.

Close of Discovery

This is the date by which all requests for documents, information, and depositions must be complete. It is usually interpreted as requiring that all responses to requests for production, interrogatories, and requests for admissions be answered by the end date set by the court, which means that the actual requests must be made sufficiently in advance of this date (typically 31 days—because responses are due to most discovery requests within 30 days) to allow the responses to be due before the cutoff date. Any depositions must also be completed by the date for the close of discovery (although the parties usually agree to finish select depositions after this date in order to accommodate scheduling problems).

Claim Construction Briefing and Hearing

In virtually every patent case, a dispute arises over the meaning of certain language used in the asserted claims of the patents at issue. These are called "claim construction" disputes, and must be resolved by the judge before trial. The parties are permitted to provide their competing arguments in briefs to the court, usually after discovery is completed, and make an oral argument on their respective positions to the court at a claim construction hearing. These hearings are often called **Markman hearings**, after the name of the case that established that the judge, and not the jury, must decide the proper meaning of disputed claim language.[xxxviii]

This is a critical juncture in every patent case because the opposing parties try to craft an interpretation of the claim language that supports their respective positions. Most patent claims are drafted using a range of language, from specific to general, in an effort by the patentee (and lawyer) to cover as much territory for the claim as possible. The PTO interprets proposed claims in the broadest reasonable way possible, and then compares their scope with the prior art, before allowing them. The goal of the patentee in dealing with the PTO is to get allowed the broadest claims possible, in order to get the broadest patent coverage possible. But the use of broad, general language in claims permits the parties in later litigation to argue for different interpretations, depending on their interests at the time of litigation. Thus, a plaintiff seeks an interpretation that is broad enough to encompass the defendant's products and services so that infringement can be proven. In contrast, the defendant proposes a narrow interpretation (or "construction") that excludes its products and services.

The court resolves the dispute over the meaning of the contested claim terms by referring to the language of the claims, the language and drawings in the patent, and the history of the proceedings in the PTO that led to the issuance of the patent. The written record of that history is preserved in what is call a "file wrapper," so named because all the written documents making up the history are contained in a three-part file folder, the two outer portions of which fold over and "wrap" the documents within it. The patentee is bound by what it told the PTO to secure allowance of the patent. The court interprets the language according to its ordinary meaning to someone of ordinary skill in the art to which the invention pertains, unless the patentee specially defined the language within the patent or its file wrapper.

Once the claim construction decision is made by the court, the scope of the patent(s) in the case is fixed, and the only remaining issue for trial is whether the claims of the patent(s) as interpreted by the court are broad enough to include the accused products and services of the defendant(s).

xxxviii *Markman, et al. v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).

Summary Judgment Briefing and Hearing

Summary judgment is a procedure that obviates a trial where one of the parties can show that its opponent cannot win—as a matter of law.[xxxix] That is, if one party can show that the evidence is so clear that no fact dispute exists (i.e., no reasonable fact finder, whether judge or jury, could decide otherwise) and that the law requires the case be decided in favor of the party moving for summary judgment, the court can decide the case without holding a trial. The judge must decide such motions based only on the applicable law (which the judge determines), the evidence (i.e., documents, interrogatory answers, admissions, and deposition testimony) developed during discovery, and the court's claim construction decision, giving the benefit of any doubt about the facts to the nonmoving party. If the court finds that a fact relevant to the outcome is in dispute, summary judgment must be denied and a trial held to resolve that factual dispute.

Understandably, these are hotly contested motions. The moving party hopes to avoid the need for a trial, and the uncertainty a jury introduces, by having the judge decide the case in its favor early on. The nonmoving party wants to go to trial, and hope that the fluid events that are the essence of a jury trial will convince the jury to decide the case in its favor.

In recent years, most patent cases are resolved on summary judgment and only a handful go to trial (about 100 per year throughout the country). The primary reason for this phenomenon is the advent of the claim construction (Markman) hearing and the decision by the court, before trial, about how the language of the asserted claims must be interpreted. The court's claim construction decision resolves most of the uncertainty in a patent case, because what the accused products or services are, and how they operate, is rarely in dispute by the time discovery concludes.

The end result is that the case is often either settled after the claim construction decision, or decided in favor of one side or the other at the summary judgment stage. If summary judgment is granted, the losing party can appeal the decision to the United States Court of Appeals for the Federal Circuit, which is the appellate court to which all decisions in patent cases are appealed.

Final Pretrial Order and Conference

The final pretrial order is the document that sets forth the "ground rules" for the trial.[xl] It typically identifies all the positions of each party, every issue in dispute in the case that must be resolved by order of the court or at trial, all the documents the parties may seek to introduce into evidence at the trial, and each witness that is expected to be called to testify, either live or via their deposition. The judge issues the order based on a draft prepared by the parties and once issued, it defines the issues that may be raised at the trial. If there is to be a jury trial, the order can rarely be modified after the final pretrial conference. If the trial is before the judge only (referred to as a "bench trial"), the judge may be more lenient in allowing modifications to the final pretrial order because he is the person deciding the case and can adjust more readily than a jury.

xxxix See Rule 56, Fed. R. Civ. P.

xl See Rule 16(e), Fed. R. Civ. P.

2.6 Trial

Figure 2.9 (credit: Photograph by Joe Gratz via flickr / CC BY 2.0)

Learning Objectives

After completing this section, you will be able to

- Understand the importance of jury selection and opposing arguments.
- Grasp why patent trials are often called "morality plays."

The following describes a jury trial. A bench trial is essentially the same, but without the elements involving the jury.[xli]

Jury Selection

The trial begins with the selection of the jury. The jury is selected (or "picked") from a group of prospective jurors called to court to serve in accordance with the laws and practices of the local jurisdiction.

Each judge has a procedure for picking a jury. Most involve a questionnaire that each prospective juror must complete and provide to the judge and the parties' lawyers. The answers are intended to reveal whether any reason exists why a prospective juror should not serve on the jury. Typical reasons for excluding a prospective juror include that the juror works for or knows one of the lawyers in the case, works for or does business with one of the parties, has a close relative that works for one of the parties, knows something about the subject matter of the case, or is unable to serve because of a disability or a previously planned vacation for which they have already purchased a nonrefundable ticket. The judge also typically asks the prospective jurors whether they have a bias or prejudice that would prevent them from making a fair decision.

xli See generally, Rules 40-63, Fed. R. Civ. P.

Once the judge has "excused" from serving any prospective jurors for "cause" (i.e., because of one of the reasons listed above or some other reason that court believes provides good cause for excusing that person), the clerk selects at random from the remaining prospective jurors the number that will be seated as the jury, plus six. The number of jurors seated in a case depends on the expected length of the trial and the practices of that judge. At least six and no more than twelve jurors must decide a case, but any number between six and twelve can be seated.[xlii] The reason a court usually seats more than six jurors is to assure that the trial will end with at least the minimum of six jurors necessary to decide the case even if one or more jurors need to be excused during the trial, such as for illness or emergency. Judges typically seat seven to nine jurors for this reason. Only rarely do judges in civil patent cases seat a full twelve jurors, because once seated a juror must participate in reaching the decision (unless excused for cause), and all jury decisions in federal cases, including patent cases, must be unanimous.[xliii] The general rule is, the more jurors there are, the longer it takes for them to reach a unanimous verdict, and the higher the likelihood that the case will result in a "hung" jury (i.e., an inability for the jury to reach a unanimous decision).

The clerk selects the designated number for the jury, plus six, because each party gets three "peremptory challenges" to the proposed jury panel, whereby a party can remove a juror without having to give a reason why. Thus, if the judge has decided the jury should begin with eight jurors, the clerk will select 14 so that the plaintiff and defendant (collectively if there is more than one plaintiff and/or defendant) are each able to strike or eliminate three prospective jurors, leaving eight to hear the case.

Once the jury is picked and sworn in, the judge will give the jury preliminary jury instructions. These explain what the case is about, how the trial will proceed, and a description of what a patent is and how the patent system works. Occasionally, judges opt to show the jury the video below, entitled "An Introduction to the Patent System," which was created by the Federal Judicial Center and is intended to be neutral.[xliv]

Opening Statements

The next step is the opening statements by the opposing parties, starting with the plaintiff and followed by the defendant. If there are multiple plaintiffs or defendants, the judge will give equal time to each side and let the individual parties work out the allocation of time. The opening statement is intended to provide a road map for the jury about what the party intends to prove, and is expected to be devoid of argument. But lawyers rarely present an opening statement without some argument. The judge can intercede, and an opposing party may object, if a party crosses the "no argument" line too far.

The opening statements are where many believe the trial is won or lost because the jury forms initial opinions about who is right and who is wrong in the case based on what they hear at this beginning stage. Thus, each party's trial lawyer tries to craft a story to tell that casts their client in the best possible light. Trials can be likened to a morality play, in which each party tries to cast themselves as in the right, and the opponent as doing them wrong. In patent cases, plaintiffs often portray defendants as thieving freeloaders, attempting to benefit unfairly from the inventiveness of the plaintiff rather than invest in developing their own products. Defendants, on the other hand, often portray patentees as greedy monopolists, trying to stifle competition and deny consumers choice and less-expensive alternatives.

Whether or not the common wisdom is correct, it is with the opening statements that the jurors begin their struggle to find truth among the competing stories they will hear during the trial.

The Evidence is Presented

The plaintiff then presents its case, calling witnesses and introducing exhibits that support its positions. Each opposing party has the opportunity to object to exhibits and testimony, and to cross-examine witnesses. The

xlii See Rule 48, Fed. R. Civ. P.

xliii See Rule 48(a) and (b), Fed. R. Civ. P.

xliv You can see this video at https://archive.org/details/gov.ntis.ava21157vnb1.

judge rules on all objections and generally oversees the proceedings to assure that the trial is conducted properly. After the plaintiff rests its case, the defendant presents its defense, again by introducing exhibits and offering testimony from witnesses. The trial concludes with the plaintiff calling rebuttal witnesses, who are limited to rebutting testimony from the defendant's witnesses. Each side usually calls one or more experts to testify on the issues of infringement and validity (or invalidity), as well as on damages.

Closing Arguments

After the evidence has been presented, the parties make their closing arguments. Usually the plaintiff goes first, followed by the defendant. The plaintiff has the opportunity to reserve time for rebuttal if it chooses. In some jurisdictions, the defendant must go first and the plaintiff next. In this case, the plaintiff has the last word, and the defendant does not have any opportunity for rebuttal.

Closing arguments give each party the opportunity to highlight what they believe is the critical evidence in their favor, and attack the deficiencies in their opponent's case. It is here that an observer would see the greatest geographic diversity in style and practice. Quite apart from the different styles of trial lawyers and judges across the country, jurors in different parts of the country expect different things from trials, and especially from closing arguments. Thus, an observer would see a very different "show" during a closing argument in the Eastern District of Texas than in the District of Maine.

After closing arguments are concluded, the judge reads the final jury instructions. These set forth the law to which the jury must apply the facts they determine during their deliberations.[xlv]

Thereafter, the jury retires to the jury room, with copies of the exhibits admitted into evidence, to decide the case.

Deliberation and Verdict

In most patent cases, the jury must answer detailed questions listed in a verdict form, called a special verdict.[xlvi] These questions typically list the accused product(s) and the asserted claim(s) and require the jury to decide infringement and validity for each claim and accused product separately. If appropriate, the jury may also be asked to decide what damages, if any, are to be awarded the plaintiff and whether any infringement they may have found to exist was willful or not.

The jury deliberates as long as it takes to reach a unanimous decision on each question. During their deliberations, the jury may ask questions of the judge in writing, which the judge answers after consulting with the parties. Should the jury tell the judge that it cannot reach a unanimous verdict, the judge may provide additional instructions and return the jury to its deliberations to "try harder." Most juries reach a unanimous decision, which is recorded on the verdict form and read by the clerk in open court with the parties present.

xlv See Rule 51, Fed. R. Civ. P.

xlvi See Rule 49, Fed. R. Civ. P.

2.7 Post-Trial Procedures

Figure 2.10 (credit: Jim henderson via Wikimedia Commons / CC0)

Learning Objectives

After completing this section, you will be able to

- Grasp the significance of equitable proceedings in the post-trial phase.

Following the jury's decision, the court will set a schedule for any equitable proceedings required and for post-trial motions. Equitable proceedings deal with matters to be decided by the judge, not the jury. In terms of post-trial motions, the winning party will ask for entry of judgment.[xlvii] The losing party will file a motion for judgment as a matter of law and usually also a motion for a new trial.[xlviii]

Equitable Proceedings

Issues arise in most patent cases that must be decided by the judge and not the jury. Many of these are called "equitable" issues because they are left to the sound, equitable discretion of the court. The most common equitable issues are the defense of inequitable conduct and the affirmative claims of willfulness and exceptional case.

Inequitable Conduct

Misconduct by the patentee in dealing with the Patent and Trademark Office, through which the patentee or its attorney deceives or misleads the patent examiner in an effort to persuade the examiner to grant the patent, was historically called "fraud on the Patent Office," but more recently has been renamed "inequitable conduct." A defendant can raise this issue as a defense, which if proven results in the patent being unenforceable—that is, the patentee is unable to enforce the patent or recover any damages for its

xlvii See Rule 54, Fed. R. Civ. P.

xlviii See Rule 50, Fed. R. Civ. P.

infringement. Many different types of inequitable conduct have been found to render patents unenforceable, from outright fabrications of alleged evidence of unexpected results in the development of the invention, to hiding relevant prior art showing prior solutions to the problem solved by the patent, to failing to tell the patent examiner that another patent examiner had rejected a related application.

Most district courts defer ruling on inequitable conduct defenses until after the liability trial addressing infringement, validity, and damages. This is a commonsense attempt at efficiency because if the patent is found invalid or not infringed at trial, the inequitable conduct issues became moot. Only if the patent is found valid and infringed does the court need to hold a separate hearing to adduce evidence of alleged inequitable conduct. The court then decides whether such conduct had been proven, which is exceedingly rare. Nevertheless, because the consequences of such a finding essentially kill the patent, defendants assert inequitable conduct whenever possible in a final effort to avoid liability.

By 1988, the Federal Circuit Court of Appeals stated: "the habit of charging inequitable conduct in almost every major patent case has become an absolute plague."[xlix] In an effort to stem the spread of this plague, the Federal Circuit sought to restrict its use by holding that inequitable conduct must be established by clear and convincing evidence of deceptive intent. Gross negligence does not suffice and "does not of itself justify an inference of an intent to deceive."[l]

Nevertheless, the plague continued, leading a Federal Circuit judge to write:

> "'Inequitable conduct' in patent practice means misconduct by the patent applicant in dealings with the patent examiner, whereby the applicant or its attorney is found to have engaged in practices intended to deceive or mislead the examiner into granting the patent. It is a serious charge, and the effect is that an otherwise valid and invariably valuable patent is rendered unenforceable, for the charge arises only as a defense to patent infringement. As this litigation-driven issue evolved, the law came to demand a perfection that few could attain in the complexities of patent practice. The result was not simply the elimination of fraudulently obtained patents, when such situations existed. The consequences were disproportionately pernicious, for they went far beyond punishing improper practice. The defense was grossly misused, and with inequitable conduct charged in almost every case in litigation, judges came to believe that every inventor and every patent attorney wallowed in sharp practice."[li]

Still the plague continued, leading Federal Circuit Judge Gajarsa in 2010 to then refer to it as a "pandemic."[lii] Research showed that the percentage of patent cases in which inequitable conduct was charged grew from less than 5 percent in 2000 to 40 percent by 2009.[liii]

Finally, on May 25, 2011, the Federal Circuit restricted the doctrine of inequitable conduct by changing the standard for materiality and clarifying the requirements for finding intent to deceive.[liv] To find inequitable conduct, the court held that the party alleging unenforceability must prove a specific intent to deceive the USPTO by clear and convincing evidence. Moreover, the decision to deceive the USPTO must be knowing and deliberate. The court also clarified that district courts may not use a "sliding scale" to find intent. In other words, the Federal Circuit held it improper to find that a weak showing of intent was sufficient based on a strong showing that the information was material, or that a weak showing of materiality was sufficient based on a strong showing of intent. Although intent can be inferred to meet the clear and convincing evidence standard, specific intent to deceive must be "the single most reasonable inference able to be drawn from the evidence."

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xlix *Burlington Indus., Inc. v. Dayco Corp.*, 849 F.2d 1418, 1422 (Fed. Cir.1988).

l *Kingsdown Medical Consultants, Ltd. v. Hollister, Inc.*, 863 F.2d 867, 872 (Fed.Cir. 1988).

li *Ferring B.V. v. Barr Laboratories, Inc.* 437 F.3d 1181, 1195 (Fed. Cir. 2006)(dissenting opinion).

lii *Taltech Ltd. v. Esquel Apparel, Inc.*, 604 F.3d 1324, 1335 (Fed. Cir. 2010)(dissenting opinion).

liii http://www.patentlyo.com/patent/2010/06/measuring-the-plague-of-inequitable-conduct.html.

Regarding materiality, the court required a "but- for materiality" standard. In other words, the standard for materiality now requires that "but for" the alleged deception, the USPTO would not have allowed the claim. Further, "[i]n making this patentability determination, the court should apply the preponderance of the evidence standard and give claims their broadest reasonable construction." The court also recognized an exception to the requirement for but-for materiality, finding that "[w]hen the patentee has engaged in affirmative acts of egregious misconduct, such as the filing of an unmistakably false affidavit, the misconduct is material."

The number of successful inequitable conduct defenses asserted has plummeted due to the strict new requirements for pleading and proving inequitable conduct imposed by the *Therasense* decision. District courts are dispensing with many allegations of inequitable conduct now at the pleading stage, eliminating the need for separate hearings on inequitable conduct issues.

Misuse of a patent is sometimes treated as a form of inequitable conduct, but it is more commonly treated as a separate affirmative defense. The elements of misuse are either a violation of antitrust laws or an effort to expand the scope or term of a patent beyond appropriate limits. For example, it is patent misuse for a patentee to file suit against products of a defendant that are far beyond the proper scope of any claims of the patentee's patent, or to seek damages or an injunction beyond the expiration of the patent. Often such unreasonable demands are accompanied by threats to the defendant's customers. If the misuse is proved, the patentee could be barred from recovering any damages until it has "purged" the misuse by abandoning its unreasonable assertions and dissipating any negative effects they caused.

Willfulness

If the jury (or judge, in a bench trial) finds that the asserted patent has been infringed, it is often asked to determine whether such infringement was "**willful**."A finding of willful infringement allows the judge to award enhanced damages under 35 U.S.C. § 284, which provides in relevant part that the court may increase the damages award by up to three times the amount found. This is a potent consequence of a showing that a defendant's infringement was willful.

The standard for showing willfulness has evolved over the years, but in 2007, the Federal Circuit significantly altered the standard governing willful infringement by requiring the patentee to prove that (1) the accused infringer "acted despite an objectively high likelihood that its actions constituted infringement of a valid patent," and (2) the "objectively defined risk . . . was either known or so obvious that it should have been known to the accused infringer."[lv] The first prong of this test is objective, whereas the second prong is subjective and involves the accused infringer's actual state of mind. Each prong requires that the infringer knew the patent existed at the time it infringed.

liv *Therasense, Inc. v. Becton, Dickinson & Co., 649 F.3d 1276, passim (Fed. Cir. 2011).*

lv *In re Seagate, 497 F.3d 1360, 1371 (en banc).*

Because an infringer cannot be shown to have willfully infringed if it did not know the patent existed, some companies have adopted a "head in the sand" approach to others' patents. This practice is thought to make sense when the field is very crowded (i.e., there are many patents owned by different patentees covering many different aspects of a product or service) because trying to uncover all the potentially relevant patents that could be asserted against a new product or service is extremely costly, if not impossible. This practice is used most frequently by large companies that can afford to deal with a patent infringement lawsuit should one be filed. Small companies and entrepreneurs, especially in emerging fields, often take great care to search for and work around any existing patents that might be close to their new product or service because they can ill afford patent litigation. Of course, searching for potentially troublesome patents and trying to avoid them is no guarantee of not getting sued. Not only are there more than two million patents in force,[lvi] but creative patentees are not above taking a patent that was thought to cover one product and arguing it is broad enough to cover what a new market entrant has introduced.

In 2012, the Federal Circuit again addressed the willfulness standard, and adjusted it again.[lvii] With regard to the objective prong of the willful infringement test, the Federal Circuit concluded:

> "We believe that the court is in the best position for making the determination of reasonableness. This court therefore holds that the objective determination of recklessness, even though predicated on underlying mixed questions of law and fact, is best decided by the judge as a question of law subject to de novo review."

This further restricts the opportunity for a patentee to prove that a defendant's infringement was willful. The patentee must first convince the district court that the defendant acted despite an objectively high likelihood that its actions constituted infringement of a valid patent. Only after that will the patentee be able to present evidence of the defendant's alleged subjective intent to the jury in an effort to convince the jury that the infringement was willful.

Patentees preferred the pre-*Bard* opportunity to present all of their willfulness evidence to the jury during the liability trial. They wanted this ability because they believed, probably correctly, that it helped the jury conclude not only that the defendant was a "bad actor" who willfully ignored the patentee's rights, but also bolstered the underlying issue of infringement itself. Post-*Bard*, the patentee can only present willfulness evidence if it is able to convince a more dispassionate judge that the defendant acted objectively recklessly, which is a higher hurdle to overcome.

If the patentee convinces the judge on the objective prong, and the jury on the subjective prong, resulting in a jury verdict of willful infringement, the issue of enhanced damages passes back to the court for determination after the trial.

Because the *Bard* case was decided in mid-2012, little empirical evidence exists on its effect on the frequency with which significant enhanced damages are awarded by the courts. However, even before *Bard*, the evidence suggests that such awards were falling. Before the Seagate restrictions were imposed in 2007, 81.4 percent of cases finding willful infringement resulted in an award of enhanced damages, but after Seagate, that number fell to 54.9 percent.[lviii]

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lvi See Dennis Crouch, *How Many US Patents are In Force?*, http://www.patentlyo.com/patent/2012/05/how-many-us-patents-are-in-force.html.

lvii *Bard Peripheral Vascular Inc. v. W.L. Gore & Assoc's. Inc.*, 682 F.3d 1003, 1006-07 (Fed. Cir. 2012).

lviii Christopher B. Seaman, *Willful Patent Infringement and Enhanced Damages After In Re Seagate: An Empirical Study*, 97 Iowa Law Review 417, 466; http://www.uiowa.edu/~ilr/issues/ILR_97-2_Seaman.pdf.

Exceptional Case

Courts have discretion to award reasonable attorneys' fees in patent infringement cases that are deemed "exceptional."[lix] The Federal Circuit has referred to this provision as a deterrent to bringing of clearly unwarranted suits on invalid or unenforceable patents.[lx]

Normally, the losing party is not liable to pay the winner's attorneys' fees—a practice referred to as the "American Rule." The rationale for this is that any party should be able to approach the court for relief without fear of having to pay an adversary's attorney's fees. Thus, the provision of the Patent Act that permits an award of attorneys' fees is an exception to the rule that each party bears its own costs in litigation.

Congress said that it intended the rule allowing an award of attorneys' fees to be applied sparingly and "that recovery of attorneys' fees will not become an ordinary thing in patent suits.[lxi] The Federal Circuit repeatedly limited district court discretion to award attorneys' fees to only those cases in which the district court found clear and convincing evidence of bad faith or at least gross negligence by the losing party in bringing or maintaining the suit, and any such determination was reviewable *de novo* on appeal.[lxii] But in April 2014, the Supreme Court struck down these restrictive Federal Circuit interpretations and held:

> "[A]n 'exceptional' case is simply one that stands out from the others with respect to the substantive strength of a party's litigating position (considering both the governing law and the facts of the case) or the unreasonable manner in which the case was litigated. District courts may determine whether a case is 'exceptional' in the case-by-case exercise of their discretion, considering the totality of the circumstances [and without any] precise rule or formula for making these determinations."

In a companion case, the Supreme Court also rejected the rule that exceptional case determinations should be reviewed **de novo** on appeal.[lxiii]

There are increasing calls for a change to the American Rule, to require losing parties to pay the winner's attorneys' fee. The principal purpose of such a change would be to deter so-called "patent trolls," entities that acquire patents for the sole purpose of making money by filing lawsuits, threatening crippling litigation expenses, and demanding settlements at or slightly more than the cost of litigation.[lxiv] It is questionable whether such a change would in fact deter the so-called trolls or instead preclude small entities and entrepreneurs from pursuing legitimate claims due to the uncertainty of the outcome of any lawsuit. Even the most "bulletproof" patent can be subject to unexpected challenges from previously undiscovered prior art or the vagaries of a jury decision favoring the defendant for reasons other than the merits. Enforcing a patent requires resources, or the availability of a contingency fee lawyer willing to take the outsized costs, and risks that patent litigation can entail. Thus, shifting the responsibility for the winner's attorneys' fees to the losing party could effectively preclude small entities and individuals from even filing a lawsuit. The 2014 Supreme Court's *Octane Fitness* and *Highmark* cases, and how district courts exercise their newly expanded discretion in finding a patent case exception under 35 U.S.C. § 285, may dissuade Congress from enacting a "loser pays" exception for patent cases.

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lix 35 U.S.C. § 285

lx *Mathis v. Spears*, 857 F.2d 749, 754 (Fed. Cir. 1988).

lxi S. Rep. No. 1503, 79th Cong., 2d Sess. (1946) (discussing the predecessor statute to 35 U.S.C. § 285)

lxii *Mathis v. Spears*, 857 F.2d 749, 754 (Fed. Cir. 1988) and *Brooks Furniture Mfg., Inc. v. Dutailier Int'l, Inc.*, 393 F. 3d 1378, 1381-2 (Fed. Cir. 2005).

lxiii *Highmark Inc. v. Allcare Health Management System, Inc.* (572 U.S._)(No. 12-1163. Argues February 26, 2014-Decided April 29, 2014).

lxiv See Section 2.10, *infra*.

Entry of Judgment

The winning party seeks entry of a judgment that grants it the relief to which it is entitled, based on the jury's verdict and the rulings of the court. First, the judgment will declare who the winning party is. Then, it will set forth the relief or remedies to which the winning party is entitled. The relief may include damages, as awarded by the jury and supplemented by the court if there was a timing difference in the calculation of the damages by the jury and the date on which they are finally awarded. A winning patentee is also entitled to prejudgment interest on the damage award, calculated at the rate specified by law, to compensate for the time value of money lost due to the delay in obtaining damages. The judgment may also set forth the post judgment interest due, for any delay between the entry of the judgment and the payment of the award to the patentee by the losing parties.

A successful patentee may also be entitled to injunctive relief, barring further sales of the infringing product or service. This is the most potent relief available to patentees. Prior to 2006, it was presumed that a patentee who proved patent infringement was irreparably injured and entitled to an automatic injunction. But in 2006, the Supreme Court rejected the presumption and ruled that, in all other kinds of cases, a successful patentee is required to prove each of the following requirements for injunctive relief: (1) that it has suffered an irreparable injury; (2) that remedies available at law are inadequate to compensate for that injury; (3) that considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; (4) that the public interest would not be disserved by a permanent injunction.[lxv]

Usually, patentees who are competitors of the infringer can meet these requirements. However, patentees who are not competitors of the infringer are usually unsuccessful in convincing courts that they are entitled to injunctive relief, and are left with only money damages(usually an on going reasonable royalty) to compensate for future infringement. This removes the most serious risk an alleged infringer faces—being barred from the market—making fighting cases through trial more palatable than before. This new rule from the Supreme Court has driven many plaintiffs out of federal court and into the International Trade Commission (ITC), when the allegedly infringing products are imported, because the ITC issues exclusion orders and cease and desist orders (roughly equivalent to federal court injunctions barring further sales) without regard to the requirements the Supreme Court laid down in the *eBay* decision.[lxvi]

Motion for Judgment as a Matter of Law

Called a "JMOL" motion, the premise of a motion for judgment as a matter of law is that the jury did not have a legally sufficient evidentiary basis for deciding the case as it did, and the court should intervene and decide the case in favor of the party moving for the JMOL. The moving party must explain in detail what legally required evidence is missing from the trial record. The opposing party (i.e., the party that won the jury verdict) then has the opportunity to identify in the trial record where the allegedly missing evidence is found, and the judge decides who is correct. The court must consider the evidence in the light most favorable to the nonmoving party. Thus, most JMOL motions fail. But the losing party always files such a motion because it is a chance to challenge the jury's verdict and avoid the remedies the winning party is demanding.

Motion for a New Trial

JMOL motions are usually accompanied by a motion for a new trial, arguing that the jury's verdict was against the manifest weight of the evidence or the jury's verdict was grossly inadequate or excessive.[lxvii] Other grounds also exist, such as newly discovered evidence that could not have reasonably been discovered earlier.

The decision to grant or deny a new trial rests with the sound discretion of the judge, who typically presided during the trial and has a keen understanding of the evidence that was introduced and whether the jury's

lxv *eBay Inc. v. MercExchange, L.L.C*, 547 U.S.388 (2006).

lxvi See footnote 7, *supra*.

lxvii See Rules 50 and 59, Fed. R. Civ. P.

verdict was against the weight of that evidence. The court's decision is not whether the court would have decided the case the same way, but whether there is sufficient evidence in the record to support the jury's verdict. The court must view the evidence in the light most favorable to the nonmoving party. Thus, most new trial motions, like most JMOLs, are unsuccessful.

2.8 Appeals

Figure 2.11 (credit: Photograph by North Charleston via flickr / CC BY 2.0)

Learning Objectives

After completing this section, you will be able to

- Understand what happens after a jury verdict is entered.
- Appreciate the chances of success of appeals based on fact versus legal issues.

Once the post-trial motions are decided and the judgment entered, the losing party may appeal to the Federal Circuit Court of Appeals. This is the one federal appellate court in the United States that hears all appealed cases involving patent disputes. Almost all patent cases that conclude with a trial, or after a decision on summary judgment, are appealed. This is partly because the cost of an appeal is orders of magnitude less than the case up to that point (e.g., tens or hundreds of thousands of dollars vs. hundreds of thousands or millions of dollars). In addition, overall the Federal Circuit affirms in full less than 60 percent of the patent cases it decides on the merits.[lxviii] Thus, it is well worth it for the losing party to pursue an appeal, because overall it has a 40+ percent chance of partial or full relief from the judgment below. Of course, the reversal rate varies by the nature of the issues before the Federal Circuit and the standard of review the court applies. Legal issues (such as claim construction, summary judgment, and jury instructions) are reviewed **de novo**, without deference to the district court's or jury's decision. This makes it much more likely that the Federal Circuit will reverse a decision because it need not give any deference to the decision of the district court. Fact issues (like infringement, many aspects of validity, and damages) are reviewed on a less flexible standard (i.e., does substantial evidence support the decision), such that the Federal Circuit (like the district court) is not free to substitute its own judgment for that of the jury. Evidentiary rulings, and other issues associated with how the trial was conducted are reviewed under the least flexible standard of review—abuse of discretion. It is rare that the Federal Circuit finds that a district court abused its discretion.[lxix]

For example, the Federal Circuit reverses claim construction decisions at a rate nearly twice as high as decisions without claim construction issues (32 percent vs. 18 percent).[lxx] It is not surprising, then, that most appeals to the Federal Circuit focus at least in part on claim construction as a basis for the appeal.

Appeals at the Federal Circuit are usually resolved within 18–24 months. Oral argument is usually scheduled within a year, depending on how much time the parties take to file their appeal briefs. Oral argument is requested and granted in almost all patent appeals. The argument occurs in the Federal Circuit courthouse in Washington, D.C., before a panel of three judges, although yearly the Federal Circuit travels to other cities to hear arguments at local law schools, which allows students, local practitioners, and the public to attend more easily. The parties are typically given 15 minutes per side to make their arguments, and after the argument, the court renders a written decision within 3–6 months.

2.9 Litigation Alternatives

Learning Objectives

After completing this section, you will be able to

- Understand the various alternative methods of dispute resolution.
- Distinguish the pros and cons of arbitration versus mediation.

The high cost, delay, and disruption of litigation motivate many adversaries to seek alternatives to litigation to resolve their disputes. Mediation and arbitration are two popular alternative dispute resolution (ADR) methodologies. A thriving business exists in the United States providing adversaries the resources to conduct mediations or arbitrations. Retired or former judges or lawyers are available to serve as mediators or arbitrators.

ADR is an increasingly popular way to resolve disputes because it is often faster, less expensive, and private, as compared with the public lawsuit procedures outlined above. The interactions among the parties and the

lxviii http://www.patentlyo.com/files/caseload_patent_infringement_affirmance_and_reversal_rates_2001-2010.pdf.

lxix For a deeper understanding of appellate standards of review in patent cases, see Michel, Paul R., Circuit Judge, CAFC, "Appellate Advocacy—One Judge's Point of View, The Federal Circuit Bar Journal, Vol. 1, No. 2, Summer 1991 (makes analogy to baseball and is readable).

lxx Ted Sichelman, Myths of (Un)Certainty at the Federal Circuit, 43 Loy. L.A. L. Rev. 1161 (2010). Available at: http://digitalcommons.lmu.edu/llr/vol43/iss3/27.

mediators/arbitrators can be kept confidential, as can any settlements reached. Confidentiality is a driving force behind ADR.

Mediation

Mediation is simply an exchange between adversaries overseen (i.e., "mediated") by an individual with expertise and/ or training in helping parties reach agreement. Often, the mediator will require the parties to submit their positions and relevant documents in a pre-mediation brief. Usually, each pre-mediation brief is confidential and only seen by the mediator and the party submitting it (i.e., the opposing party does not see the other side's mediation brief). The mediator will review the materials submitted and then set a date for the parties to meet with the mediator, usually in the mediator's offices or a neutral location (such as a hotel conference room). Each party commits to bring to the mediation one or more people with the authority to settle, so that the people at the mediation can discuss the dispute and reach an agreement settling it without having to seek approval from others.

At the mediation, the mediator typically starts by meeting with all the parties together, and reviews the dispute and the issues that require settlement. The mediator will then meet with each party separately, engaging in "shuttle diplomacy," in an attempt to bring the parties to a common middle ground. Occasionally, when it may appear that the parties' respective positions leave a gap between them, the mediator may make a "mediator's proposal" that tries to bridge that gap. If the parties agree, typically a written agreement will be signed before they end the mediation—which may be a list of terms for later fleshing out in a full agreement or an actual final settlement agreement. Because anything left to later discussion can give rise to further disputes, most mediators try to get the parties to a full, signed agreement before they depart the mediation.

Perhaps surprisingly to some, mediation often succeeds, if not the first time, then weeks or months later, after the parties have a chance to think things through. Mediations can be conducted while litigation is pending, or before litigation is filed. In the latter case, often the parties will sign a "standstill agreement" that promises that neither will file a lawsuit against the other on the subject matter of the mediation until they agree the mediation has failed.

District courts and the Federal Circuit often have mediation programs that attempt to help the parties resolve their disputes voluntarily. Increased attention is given to these programs as the resources of the courts have dwindled and the caseloads increased because each successful mediation is one less case that requires the resources of the court.

Arbitration

The principal difference between mediation and arbitration is decisiveness. Mediations result in settlements only if all parties agree to a resolution. In most arbitrations (so-called "binding arbitrations"), the parties agree to be bound by the decision of the arbitrator(s). There is a nonbinding version of arbitration, where the parties ask the arbitrator(s) to render a decision, but do not agree to be bound by it. In practice, these are actually mediations because they result in a settlement only if all parties agree to the result. Such nonbinding arbitrations are most often used when the parties have attempted to reach a mediated settlement but reach an impasse on one or more critical issues. They may then agree to submit those impasses to nonbinding arbitration, where one or more arbitrators (usually experts on the subject matter of the impasse issues) evaluate the facts, as presented by the parties, and render a decision that the parties can review to understand how an impartial third party looks at the issues. This often helps the parties craft a mediated settlement on their own.

Most arbitrations are binding, and resemble lawsuits and trials more than mediations. The parties may agree to submit their dispute to a single arbitrator (like a retired judge), but most often a panel of three arbitrators is appointed to hear the case. The parties may agree on all three arbitrators, drawn from a list of suitable candidates provided by the American Arbitration Association[lxxi] or some other entity in the arbitration business, or each party selects one arbitrator and those two arbitrators pick the third.

The parties agree on the rules that govern the arbitration, which can limit discovery, evidence, witnesses, and trial time, in whatever manner the parties agree. Once the parties agree on the rules, the arbitration is controlled by the arbitration panel, which enforces the rules and renders a binding decision. Usually, arbitration decisions are not appealable (except for gross malfeasance by the arbitrators), but the parties can provide for appeal rights if they choose. But prolonging the resolution of the dispute by allowing an appeal is contrary to the cost and time-savings objectives of most arbitrations.

Arbitrations have become particularly popular for resolving patent disputes that cross international borders and involve multiple patents issued by different countries. No one court can resolve such disputes, so international arbitration, with arbitrators expert in different countries' laws can fill the gap.

2.10 Patent Trolls and Efforts to Thwart Them

Figure 2.12 (credit: Photograph by Alexandre Dulaunoy via flickr / CC BY 2.0)

Learning Objectives

After completing this section, you will be able to

- Appreciate the threat posed by patent trolls to innocent businesses.
- Understand the difference between legitimate patent holders enforcing their rights and extortionist patent trolls who try to game the legal system.

lxxi http://www.adr.org/aaa.

Starting in the 1990s, but increasing in the new millennium, a type of plaintiff with a particular litigation and settlement strategy gained notoriety in the United States—the so- called "patent troll." By 2012, the majority of patent suits were brought not by businesses making products covered by patents they owned and seeking to halt competitors believed to be infringing their patents, or even by small entities and entrepreneurs pursuing legitimate claims, but instead by what some detractors call "patent trolls" (after the mythical creatures that demanded payment for safe passage over a bridge).[lxxii] Although some have more recently attempted to discern a difference between what they consider "good" and "bad" trolls by labeling the former "non-practicing entities" (NPEs) or "patent monetization entities" (PMEs), for the purposes of this section, we will refer to such entities as trolls.

As plaintiffs, trolls seek to take advantage of the fact that U.S. patent litigation costs have become so high that many defendants are willing to pay to make such cases go away. Trolls file lawsuits not to protect a business from an infringing competitor, but to derive settlement revenue from defendants willing to settle for less than litigation costs. Trolls often acquire patents of ambiguous scope and questionable value, file suit against multiple defendants, and rely on the presumption of validity accorded all issued patents to extract settlements for less than it would cost any one defendant to defend against the infringement claim. Because trolls have few documents other than the patents and their file histories, and even fewer employees, they are not subject to the outsized expense of discovery that a commercial business with warehouses of documents and scores of employees faces in patent litigation. Because discovery costs for such defendants are so much greater than for troll plaintiffs, defendants feel pressure to settle for less than the cost of litigation, lining the pockets of trolls. Such activities in the aggregate have proven very profitable for trolls, and expensive for defendants.

Spurred by target companies, the America Invents Act legislation in 2011 (see infra, Section X.3.3) included a change in rules governing the joinder of parties, stating:

> "...accused infringers may not be joined in one action as defendants or counterclaim defendants, or have their actions consolidated for trial, based solely on allegations that they each have infringed the patent or patents in suit."

This eliminated a tool of trolls—namely, filing a single case against scores or even hundreds of alleged infringers.[lxxiii] However, trolls simply adapted by filing multiple lawsuits and seeking consolidation for discovery, which increases their costs somewhat but avoids the purpose of the change.

More recently, politicians have scrambled to propose a myriad of different legislative fixes, from shifting the cost of unsuccessful litigation to plaintiffs, to staying litigation against customers of another's product until a suit against the manufacturer is concluded.[lxxiv] Even President Obama was involved, asserting his administration's own views for a solution.[lxxv]

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lxxii In 2012, one article suggests 56 percent of patent infringement cases filed in the United States were Filed by trolls: https://lexmachina.com/2013/04/09/lex-machina-releases-the-aia-500-expanded/. Another put the number at 62 percent: http://www.lexology.com/library/detail.aspx?g=1e1a0e7bd9a6-4366-818f-a6935ab0fabe&utm_source=Lexology+Daily+Newsfeed&utm_medium=HTML+email+-+Body+-+Federal+section&utm_campaign=Calibar+IP+section+subscriber+daily+feed&utm_content=Lexology+Daily+Newsfeed+2013-04-29&utm_term.

lxxiii See, http://www.americanbar.org/publications/landslide/2012_13/march_april/joinder_over_year_after_america_invents_act.html.

lxxiv "See http://www.ipo.org/wp-content/uploads/2013/06/Patent-Litigation-Bills-Summary-Comparison-Chart-EXPANDED.pdf, http://patentlyo.com/patent/2013/03/guesteDitorial-throwing-trolls-off-the-bridge.html, http://www.ipwatchdog.com/2013/08/13/congress-sirens-song-patent-litigation/id=44573/, https://truthonthemarket.com/2013/03/15/the-shield-act-when-bad-studiesmake-bad-laws/."

lxxv http://www.nytimes.com/2013/06/05/business/president-moves-to-curb-patent-suits.html?_r=0.

Not everyone thinks legislation is appropriate, or even necessary. A panel at Yale Law School in April 2013 yielded decidedly mixed views. [lxxvi] And then Chief Judge Rader of the Federal Circuit Court of Appeals coauthored an op-ed piece in the *New York Times*, recommending that judges should use 35 U.S.C. §285 to foil patent trolls by imposing costs and sanctions at the judicial level.[lxxvii] But again, not everyone thinks that is realistic.[lxxviii] The Supreme Court embraced Judge Rader's recommendation in its 2014 decisions in *Octane Fitness* and *Highmark*, significantly broadening the district court's discretion in finding a case exceptional and awarding attorneys' fees. (See *supra*, Section 2.7, "Exceptional Case.") But even with such expanded discretion and power, trial judges cannot rule on the merits of a case without some basis for it, and that requires money spent by defendants. Thus, it is not easy for a district court judge to stop what trolls rely upon, namely the use of litigation expense and leverage to extract settlements. Getting to the merits of the claims takes time and significant expense—often more than the cost to settle, with no assurance as to outcome.

As of early 2015, the problem of trolls remains a subject of widespread discussion and debate. Legislation that was proposed in 2014 to address the problem is stalled, and although new legislation is still being discussed, many experts believe that the state and federal actions already taken to rein in abusive patent litigation—including important U.S. Supreme Court decisions in 2015 regarding software patentability and fee-shifting in exceptional cases—make it less likely that new legislation will be introduced any time soon.

District courts, for example, have already begun applying the standards recently announced by the Supreme Court in *Octane Fitness* and *Highmark*, and may be more willing to make abusive patent litigants pay attorneys' fees. Time will tell if the new fee-award judicial regime will lessen the pressure to implement legislation against abusive litigants. The Eastern District of Texas, one of the most popular venues for patent litigation in the United States, has added a new Track B docket, which specifically addresses a number of proposals considered by Congress, including early disclosure of certain information, such as licensing information, as well as very early disclosure of both the damages sought and the method of calculating those damage.[lxxix]

Meanwhile, a growing number of state legislatures and state attorneys general have also begun using consumer protection laws to clamp down on patent trolls.[lxxx] And the White House in 2014 issued a series of Executive Orders intended to further curb patent litigation abuse and strengthen the patent system.[lxxxi]

Finally, a movement is taking hold within the patent licensing industry itself to develop a voluntary code of conduct or standards of ethical behavior. Companies like Conversant and Dominion Harbor Group have committed themselves publicly to a set of ethical guidelines for patent licensing, and other companies are also considering doing so.[lxxxii] The Licensing Executives Society of the U.S. and Canada (LES), the industry's principal professional organization, is also developing a set of "best practice" guidelines for ethical patent licensing activity.

The importance of patents to America's economic prosperity and competitiveness ensures that competing interests will continue to strive for an advantage commercially, legislatively, and judicially. Change will continue after the publication of this chapter. The status quo does not last long in our field.

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lxxvi http://www.patentlyo.com/patent/2013/05/patent-troll-panel-at-yale-law-school.html.

lxxvii http://www.nytimes.com/2013/06/05/opinion/make-patent-trolls-pay-in-court.html.

lxxviii http://www.techdirt.com/articles/20130605/09065423327/chief-patent-judge-speaks-outagainst-patent-trolls.shtml.

lxxix http://mcsmith.blogs.com/eastern_district_of_texas/2014/02/eastern-district-of-texas-resumescase-tracking-with-track-b-for-patent-cases.html.

lxxx http://www.conversantip.com/blog/states-stepup-fight-against-patent-trolls/.

lxxxi http://www.conversantip.com/blog/usadministration-takes-smart-steps-to-strengthenthe-patent-system/.

lxxxii http://www.conversantip.com/news-article/iam-guidelines-for-ethical-patent-licensingprovide-basis-for-new-approach-to-thetroll-debate/ and http://finance.yahoo.com/news/finjan-holdings-commits-licensingbest-130000509.html

Assessment Questions

1. Responsibility for legally enforcing patents rests with which of the following bodies?
- A. The U.S. Patent and Trademark Office (USPTO)
- B. The U.S. Department of Justice.
- C. The owner of the patent, suing in a federal civil lawsuit.

2. Patent owners have which of the following rights under the law?
- A. The exclusive right to "practice" the patent—meaning the exclusive right to make or sell products based on the patent.
- B. The right to exclude others from making, using, offering for sale, selling, or importing the invention covered by the patent throughout the United States.
- C. Both of these.

3. Which of the following is required in order to infringe a patent?
- A. Intending to infringe the patent.
- B. Making, using, or selling the patented invention without authorization.
- C. Knowing that the patent exists.

4. Which of the following is the legal definition of patent infringement?
- A. One or more of a patent's claims match (or "read on") the features and functions of a device or process.
- B. A device or process that performs a "substantially similar" functions to those described in a patent's claims.
- C. Both of the above are correct.

5. Which of the following illustrates the "doctrine of equivalents"?
- A. If a device performs substantially the same function in substantially the same way as your patent claim, infringement exists if any differences are insignificant.
- B. A patent calling for an "adhesive" connection (describing glue as the preferred adhesive) may be infringed by a device using a Velcro® fastener.
- C. Both of the above are correct.

6. If you believe your patent is being infringed, you have how many options for recourse?
- A. Two. You can sue the infringer in federal court, or ignore the infringement.
- B. Three. Besides the two above, you can simply demand he stop infringing.
- C. Four. You can sue the infringer, demand he stop infringing and pay monetary damages, offer the infringer a license in return for royalties, or ignore it.

7. Patent infringement suits can take years and cost millions of dollars. Which of the following is another option patent owners have in seeking redress for infringement?
- A. Litigation financing in exchange for a share of any damages.
- B. Out-of-court license and royalty settlements.
- C. Contingency lawyers take the case for a share of any damages.
- D. All of the above.

8. If you think multiple parties are infringing, what is your best strategy?
- A. Sue them one at a time, so they don't gang up on you.
- B. Pick the one with the biggest pockets, as the settlement will likely be larger.
- C. Sue them all simultaneously, and let them sort out their differences.

9. Should you alert an infringer beforehand that you intend to file suit?
   A. Always. This gives them the opportunity to settle prior to you filing a costly suit.
   B. Never. They can then sue you preemptively, giving them the vital initiative in seeking a venue of their choice and a declaratory judgement of noninfringement.
   C. Yes, but only if you file suit simultaneously or shortly afterwards.

10. How often do plaintiffs win at trial?
   A. 60 to 75 percent of the time.
   B. 80 to 90 percent of the time.
   C. 40 to 50 percent of the time.

11. Which of the following is NOT a valid reason for filing a motion to dismiss once a suit is filed in a federal court?
   A. Improper jurisdiction.
   B. Improper venue.
   C. Improper (or invalid) patent.
   D. Failure to state a proper claim.

12. Which of the following is NOT a possible defense in a defendant's answer to a claim?
   A. The patent is invalid.
   B. The patent is not infringed.
   C. The plaintiff waited too long to file suit.
   D. The patent covers a nonessential part of the allegedly infringing product.

13. Why have defendants increasingly turned to post-grant review proceedings at the PTO, such as *inter partes review*, since the America Invents Act was passed in 2011?
   A. The PTO is less likely to judge that a patent has been infringed.
   B. It's quicker than waiting for a trial.
   C. The PTO has shown a strong likelihood of finding challenged patents invalid.

14. What role does discovery play in an infringement case?
   A. Through production of documents and interrogatories, either side may discover information that may be decisive in confirming or rebutting infringement claims.
   B. Discovery is often an endless fishing expedition that escalates the costs to both parties exponentially.
   C. Both of these describe the role of discovery in an infringement case.

15. What is the most critical pretrial phase of every patent infringement case?
   A. Discovery.
   B. Summary Judgment.
   C. Claims construction (or Markman) hearings.
   D. The Verdict.

16. Why do courts usually seat seven to nine jurors rather than six or twelve in most patent cases?
   A. You need an odd number of jurors to break a tie vote on the verdict.
   B. Six jurors won't be enough for a legal verdict if one is excused during trial, and twelve jurors will likely take too long to decide the case.

17. Why are patent trials often thought of as morality plays?
   A. The facts of the case, not each party's moral views, are all that matters to a jury.
   B. It is immoral to spend $3 million to $10 million on a patent suit.
   C. Each party casts itself as in the right and its opponent as doing them wrong.

18. Which of the following is the definition of inequitable conduct?
   A. Deceiving or misleading the patent office to grant a patent.
   B. Deceiving or misleading a jury during opening arguments.
   C. Deceiving or misleading the opposing party during the discovery phase.

19. What's the standard for proving willful infringement, leading to enhanced damages?
   A. Selling a product despite knowing that a patent exists that the product might be infringing.
   B. Selling a product despite an objectively high likelihood that it infringed a valid patent and that this risk was known or should have been known to the infringer.
   C. Deliberately not conducting a prior art search to determine if a patent exists that your product might be infringing.

20. What is the standard for imposing attorneys' fees on the losing party to a patent suit?
   A. Convincing evidence of bad faith or gross negligence by the losing party.
   B. A case that "stands out from others" in the weakness of the plaintiff's case or the unreasonable or abusive manner in which it was litigated.

21. What is often the most serious damage that a court can impose upon an infringer?
   A. A very large award for monetary damages.
   B. Pre- and post judgment interest payments on the damage award.
   C. Injunctive relief barring further sales of the infringer's products.

22. Which of the following explain why patent infringement verdicts are almost always appealed?
   A. The cost of an appeal is orders of magnitude less than the cost of the trial itself.
   B. Legal issues such as claim construction are reviewed **de novo** - meaning, without regard to the previous trial's rulings.
   C. The U.S. Court for the Federal Circuit, the appeals court, affirms in full less than 60 percent of the patent cases it decides on the merits.
   D. All of the above.

23. As an alternative to litigation, mediation is different from arbitration in what way?
   A. Mediations result in settlements only if both parties agree.
   B. In arbitrations, the parties are bound by the decision of the arbitrator.
   C. Both of these are accurate.

24. Which of the following is the definition of a "patent troll"?
   A. A patent owner who licenses their patents rather than makes or sells products.
   B. A patent owner whose main source of revenue is patent litigation.
   C. A patent owner whose main source of revenue is "nuisance settlements" for less than the cost of litigation.