

What Every Inventor and Entrepreneur Needs to Know about Patents

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Agenda

- Why patents? Patents vs. open source vs. trade secret
- Patents as property: who owns them, and what can you do with them?
- The differences between a patent disclosure and a technical paper
- The differences between patent examination and peer review
- Are patents a rich man's (big company's) game?
- Self representation vs. hired help: patent agents, patent attorneys, etc.
- U.S.-only vs. multi-jurisdictional filing
- The patent timeline and how to fit it into business plans
- Timing issues: invention conception, reduction to practice, conference or trade show presentation, talking to investors and customers, publications, provisional, non-provisional, and PCT filings, non-disclosure agreements, etc.; what has to come before what and why?
- After examination: interferences, re-examination, infringement suits, damages, appeals, licenses, etc.
- Consequences of new changes in patent law
 - Patentable subject matter is redefined by Supreme Court, especially as applied to software and business methods
 - Obviousness
 - First-inventor-to-file is about to become law in the U.S. (U.S. currently has a first-to-invent priority system)

Historical Basis

- Earliest patent law: Venetian statute of 1474.
- British “letters patent” granted monopoly rights starting in 1331.
- Under James I, Statute of Monopolies (1624) restricted letters patent to inventors or introducers of original inventions for a fixed number of years.
- Requirement for a written description was added under Queen Anne (1702–1714).

U.S. Constitution

Article 1 – The Legislative Branch

Section 8 – Powers of Congress

The Congress shall have Power To lay and collect Taxes, Duties, Imposts and Excises, to pay the Debts and provide for the common Defence and general Welfare of the United States; but all Duties, Imposts and Excises shall be uniform throughout the United States;

To borrow money on the credit of the United States;

To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes;

To establish an uniform Rule of Naturalization, and uniform Laws on the subject of Bankruptcies throughout the United States;

To coin Money, regulate the Value thereof, and of foreign Coin, and fix the Standard of Weights and Measures;

To provide for the Punishment of counterfeiting the Securities and current Coin of the United States;

To establish Post Offices and Post Roads;

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**;

To constitute Tribunals inferior to the supreme Court;

To define and punish Piracies and Felonies committed on the high Seas, and Offenses against the Law of Nations;

To declare War, grant Letters of Marque and Reprisal, and make Rules concerning Captures on Land and Water;

To raise and support Armies, but no Appropriation of Money to that Use shall be for a longer Term than two Years;

To provide and maintain a Navy;

To make Rules for the Government and Regulation of the land and naval Forces;

To provide for calling forth the Militia to execute the Laws of the Union, suppress Insurrections and repel Invasions;

To provide for organizing, arming, and disciplining, the Militia, and for governing such Part of them as may be employed in the Service of the United States, reserving to the States respectively, the Appointment of the Officers, and the Authority of training the Militia according to the discipline prescribed by Congress;

To exercise exclusive Legislation in all Cases whatsoever, over such District (not exceeding ten Miles square) as may, by Cession of particular States, and the acceptance of Congress, become the Seat of the Government of the United States, and to exercise like Authority over all Places purchased by the Consent of the Legislature of the State in which the Same shall be, for the Erection of Forts, Magazines, Arsenals, dock-Yards, and other needful Buildings; And

To make all Laws which shall be necessary and proper for carrying into Execution the foregoing Powers, and all other Powers vested by this Constitution in the Government of the United States, or in any Department or Officer thereof.

Ways of Securing Exclusive Right

- Trade secret
- Copyright
- Trademark (service mark, trade dress)
- ***Patent***
- Business and political practice
 - monopoly power
 - market dominance
 - first to market
 - etc.

Laws, Rules, and Procedures

- Constitution
- Title 35 of United States Code (80 pages of law passed by Congress)
- Title 37 of the Code of Federal Regulations (330 pages of rules written by the USPTO)
- Manual of Patent Examination and Procedure (MPEP) (3000 pages)
- Case law (220 years of precedential appeals and court decisions)

The United States Patent and Trademark Office (Dept. of Commerce)

- Receives applications
- Searches prior art and evaluates sufficiency of disclosure, subject matter qualification, novelty, and non-obviousness
- Issues patent if all conditions met
 - Certifies novelty and non-obviousness
- *DOES NOT CERTIFY OR EVALUATE:*
 - scientific validity
 - conformance with laws of nature
 - engineering feasibility
 - economics
 - business value

35 U.S.C. § 101 Inventions patentable

Whoever ***INVENTS OR DISCOVERS***
any ***NEW*** and ***USEFUL***
PROCESS, MACHINE, MANUFACTURE, or COMPOSITION
OF MATTER,
or any new and useful ***IMPROVEMENT*** thereof,
may obtain **A** patent therefor,
subject to the conditions and requirements of this
title.

Principle Conditions and Requirements

- **35 U.S.C. § 112:** disclosure contents and formalities (requires enablement, written description, definiteness, best mode, *at least one claim*)
- **35 U.S.C. § 102:** *claimed* invention not anticipated by prior use, sale, patent, or publication
- **35 U.S.C. § 103:** *claimed* invention not “obvious” variation of (combination of) prior art

What are Claims?

- **Single sentence.**
- **Independent and (progressively narrower) dependent.**
- **Preamble (descriptive) followed by required features.**
- **Usually open-ended (“comprising” means can also have additional elements).**
- **Good claims contain just enough limitations to be novel and non-obvious over the prior art *and no more.***

Claims Example 1

- 1. A device for supporting objects, comprising a horizontal support member; and three vertical support members each having one end connected to the same face of said horizontal support member.**
- 2. The device of claim 1, further comprising a fourth vertical support member having one end connected to the same face of said horizontal support member as that to which said three vertical support members are connected.**

Claims Example 2

U.S. Patent No. 7,379,286

“Quantum Vacuum Energy Extraction”

1. A system for extracting and collecting electromagnetic radiation from the ambient surroundings, comprising: (a) a supply of fluid characterized by its ability to (i) take in electromagnetic radiation from the ambient surroundings and (ii) release at least some of said energy when the fluid is caused to pass into a Casimir cavity; (b) a first arrangement configured to collect at least some of the electromagnetic radiation released by said fluid; (c) a second arrangement including means defining a given path for containing said fluid along said path; (d) a third arrangement including a Casimir cavity positioned within said given path and cooperating with said second arrangement such that said fluid is caused to pass into and out of the cavity as the fluid is contained along said given path, said Casimir cavity being positioned in sufficient communication with the ambient surroundings and with said first arrangement so as to (i) cause said fluid containing electromagnetic energy taken from the ambient surroundings to release at least some of said energy to said first arrangement when the fluid passes into said cavity and (ii) to again take in electromagnetic energy from the ambient surroundings when the fluid passes out of said cavity.

Exclusive Right

- Monopoly right to make, use, or sell in the USA for 20 years from earliest filing date

In exchange for

- Teaching the public how to make, use, and practice the claimed invention

So what about Software?

Can be protected by

- Trade secret
- Copyright
- Patent

Or alternatively

- Offered free to promote hardware use and sale
- Sold or provided under an *open source* license

Patent Ownership

- Ownership initially resides with inventor(s)
 - An inventor is a person who *conceives* of at least a part of the *claimed* invention.
 - Each has an undivided interest in the entire patent.
- *NOT* necessarily inventors (or owners)
 - persons who help build an invention,
 - inventor's supervisor or employer,
 - persons who write about an invention.
- Ownership can be “assigned” to change ownership
 - may be obligation to assign by employment or consulting contract;
 - Changes in ownership are a matter of State property and contract law.

Types of Patent Owners

- Inventors
- Inventors' employers (or consultants' clients)
- Funding agencies with obligation-to-assign agreements (Bayh-Dole Act)
- Practicing vs. non-practicing entities
- small entities/start-ups/solo inventors vs. large companies vs. universities/research institutes
- Need “standing” (i.e., ownership) to assert patent rights

What can you do with a Patent?

- Sell (“assign”)
- License
 - exclusive or non-exclusive
 - cross-license
 - upfront or scheduled payments
 - percentage royalties
 - use restrictions to field, territory, time
- Market
 - mark products and advertising collateral
 - use to promote business
- Defend
 - pursue infringers

Monitoring Patents

- **Freedom to operate**
 - Search for patents covering your product before introduction.
 - Develop work-arounds or negotiate licenses.
 - Formal freedom-to-operate opinion from outside counsel
 - ✓ provides best protection against willful misconduct charges (and treble damages);
 - ✓ Protects opinion counsel from discovery during litigation.
- **Infringement by competition**
 - Monitor and analyze competing products;
 - Issue Notices of Infringement;
 - Negotiate licenses and royalties;
 - Be prepared to enforce by litigation.

Patent Disclosure vs. Technical Paper

1. Contents

Patent:

Background, Summary, Brief description of the drawings, Detailed description, Claims, Abstract, Drawings

Technical paper:

Abstract, Introduction, Methods, Results, Discussion, Conclusion, References

Patent Disclosure vs. Technical Paper

2. Attribution

Patent inventor:

person who *conceives* of at least a part of the claimed invention

Technical paper author:

any contributor including discoverer/inventor, builder, designer, tester, programmer, writer, analyst, technician, etc.

Patent Disclosure vs. Technical Paper

3. Focus

Patent:

- boundary of claims
- breadth of invention
- how to make and use
- best mode

Technical paper:

- background and context
- specific results achieved
- limited to narrow scope of investigation

Patent Disclosure vs. Technical Paper

4. Strategies

Patent:

- Prevent invent-around.
- Avoid limiting language.
- Provide additional scope for possible continuation applications.
- Avoid over-disclosure.
- Anticipate competition.

Technical paper:

- Subdivide for resume building and conference paper presentation.
- Disclose features but might not disclose how to reproduce (e.g., product features).

Patent Disclosure vs. Technical Paper

5. Review

Patent Examination:

- Searches prior art for anticipation and obviousness, evaluates enablement and written description.

Technical paper peer review:

- Checks for soundness of methods, analysis, and arguments.

Types of Patents

- Provisional/Non-Provisional
- Utility (new article or method that is “useful” — includes “life” if produced by technology)
- Design (ornamental design for an article of manufacture)
- Continuation, Continuation-in-Part, Divisional
- PCT, Paris Convention (to extend outside of USA)
- Plant (newly bred or discovered plant reproduced vegetatively)
- [New plant seeds can be registered and protected through the USDA]

Typical Prosecution History

U.S. Patent App. No. 12/167,030

“Relieving Urban Traffic Congestion”

Date	Transaction Description
06-15-2010	Recordation of Patent Grant Mailed
05-26-2010	Issue Notification Mailed
06-15-2010	Patent Issue Date Used in PTA Calculation
05-03-2010	Dispatch to FDC
05-01-2010	Application Is Considered Ready for Issue
04-29-2010	Issue Fee Payment Verified
04-29-2010	Issue Fee Payment Received
02-05-2010	Mail Notice of Allowance
02-03-2010	Document Verification
02-03-2010	Notice of Allowance Data Verification Completed
01-26-2010	Date Forwarded to Examiner
12-27-2009	Response after Non-Final Action
01-08-2010	Mail Examiner Interview Summary (PTOL - 413)
12-23-2009	Examiner Interview Summary Record (PTOL - 413)
09-30-2009	Mail Non-Final Rejection
09-28-2009	Non-Final Rejection
09-18-2009	Date Forwarded to Examiner
09-16-2009	Request for Continued Examination (RCE)
09-18-2009	Disposal for a RCE / CPA / R129
09-16-2009	Workflow - Request for RCE - Begin
07-16-2009	Mail Examiner Interview Summary (PTOL - 413)
07-13-2009	Examiner Interview Summary Record (PTOL - 413)
07-10-2009	Mail Final Rejection (PTOL - 326)

Date	Transaction Description
07-10-2009	Final Rejection
07-01-2009	Date Forwarded to Examiner
06-16-2009	Response after Non-Final Action
05-14-2009	PG-Pub Issue Notification
04-02-2009	Mail Non-Final Rejection
03-30-2009	Non-Final Rejection
07-02-2008	Information Disclosure Statement considered
01-12-2009	Case Docketed to Examiner in GAU
10-17-2008	IFW TSS Processing by Tech Center Complete
07-02-2008	Information Disclosure Statement (IDS) Filed
07-02-2008	Reference capture on IDS
08-08-2008	Application Dispatched from OIPE
07-24-2008	Mail-Record Petition Decision of Granted to Make Special
07-23-2008	Record Petition Decision of Granted to Make Special
07-19-2008	Sent to Classification Contractor
07-21-2008	Filing Receipt
07-21-2008	Application Is Now Complete
07-11-2008	Cleared by OIPE CSR
07-02-2008	Petition Entered
07-06-2008	IFW Scan & PACR Auto Security Review
07-02-2008	Information Disclosure Statement (IDS) Filed
07-02-2008	Initial Exam Team nn

Patent Costs

- Self-filed “provisional” application \$110
- Self-filed (on-line) “non-provisional” \$462
 - Typically buys two rounds of examination and response.
- Professional drafting \$3,000–20,000
- Basic prosecution costs \$0–15,000
- International costs (one patent “family”) \$100,000+
- Interference proceeding up to \$500,000
- Infringement lawsuit (prosecution or defense) \$1.5–5 MM

So are Patents only a Rich Man's Game?

- Only about 1 patent out of 3000 is ever litigated.
- Patents are respected by most businesses.
- Patents can give individuals and small businesses leverage against large companies.
- Most disputes are settled by negotiated licenses and/or royalties (if needed).
- Venture funding entities and company valuers recognize the value of patents.

Can You/Should You Do It Yourself?

- You *can* represent yourself as in any legal proceeding.
- All necessary instructions and guidance is available on-line both at the USPTO and elsewhere.
- Anecdotally, many or most applications filed *pro se* are abandoned.
 - Reliable statistics are not available.
 - <http://www.jmripl.com/Publications/Vol9/Issue4/Swamidass1.pdf>
- Patents that do issue from these applications are frequently easy to work around and have limited scope.
- While the MPEP instructs examiners to help *pro se* applicants with useful suggestions, they generally don't do so.
- Few inventors have good legal intuition or training; training of a new patent attorney or agent typically takes about 3 years.
- Competent professional help can be a good investment in the long run.

Types of Professional Help

- Inventor help companies
 - Beware! Many are fraudulent. Search “inventor scams,” for examples.
- Large law firms.
- Small firms and solo practitioners.
- Patent Attorneys.
- Patent Agents.
- USPTO administers its own “bar” exam and registration system; requires technical background.
- Patent litigators are not necessarily registered with the USPTO.
- Persons registered to practice patent law before the USPTO need not be attorneys.
- Search firms.

Should You File Internationally?

- In which countries do you actually do business?
- Do you plan to expand into new countries soon?
 - In which markets do you really need protection?
- Consider both countries where you plan to manufacture and countries where you plan to sell.
- What can you realistically afford?
 - Do a cost-benefit analysis.

International Enforcement

- If “manufacture” is multinational, things get complicated:
 - For example, *Microsoft v. AT&T*, 550 U.S. 437 (2007), held that “gold masters” of software created in U.S., then copied and distributed outside the U.S. do not infringe a U.S. patent, even though, in general, shipping components abroad for final assembly does infringe.
- The U.S. International Trade Commission (ITC) is a quasijudicial federal agency which adjudicates cases involving imports that allegedly infringe intellectual property rights.

International Patent Practice

- Actual patents are a matter of national law. There is no true international patent system, and countries do not recognize each other's patents.
- An “International Patent Application” can be filed under the Patent Cooperation Treaty (PCT) in the World Intellectual Property Organization (WIPO). However, it does not result in an “international patent” (which does not exist) but rather serves as a first step for potential national filings at a later date (typically up to either 30 or 31 months after the earliest priority date for the application).
- 184 countries are members of WIPO.

International Patent Practice—National Phase

- There are several regional patent systems that facilitate filings in multiple countries with a common search and examination process. The most important of these for most U.S. businesses is usually the European Patent Office, currently serving 38 countries in Europe.
- Most countries also allow applications to be filed within 12 months based on an application originally filed in another country.
- Unlike the U.S., most countries have no grace period for prior disclosure of invention subject matter beyond prior patent filings in the PCT, regional offices, or other countries.
- Unlike the U.S., most countries have a first-to-file system where applicants need not be inventors.

The Patent Timeline

- Conception → Reduction to practice → Filing
 - confidential (if desired), patent pending status
- Publication, Office Actions, Amendments, Responses
 - can send Notice of Infringement if published (public on notice)
- Notice of Allowance → Pay issue fees (\$1055*) → Patent issues
 - can collect royalties, sue for infringement, etc.
- Pay maintenance fees (4, 8, 12 years after issuance: \$490, \$1240, \$2055*) → Patent expires

*2011 rates for small entity.

Timing Issues

1. Before filing

- Conceive before competition (***DOCUMENT CONCEPTION DATE***).
- File as soon as practical after conception.
- Maintain diligence in reducing to practice between conception and filing.
- Can't add "new matter" after filing.
- Avoid any form of disclosure not covered by non-disclosure agreement.
- In U.S.A., must file within 12 months of first public use, sale, or public disclosure.
- Elsewhere, must file *before* public disclosure.
- If you are about to disclose, consider filing a Provisional Application,
 - Ideally, having same content and claims as a Non-Provisional.
 - If necessary, file your conference paper, etc. as Provisional.
- If development is still active, but timing is critical, consider using multiple Provisionals.
- "Reduction to practice" can be either "actual" or "constructive."

Timing Issues

2. Searches, etc.

- **Prior art search**
 - Search patent databases yourself (free)
 - Hire search firm (expensive if thorough)
 - Have agent or attorney provide
- **Pros and cons:**
 - Find out if invention already exists
 - Find out what competition exists in a given area; write claims to distinguish and/or anticipate competition
 - Must disclose relevant prior art found to USPTO

Timing Issues

3. Before filing – problems

- **Filing too early**
 - Important aspects of invention may not be adequately described or enabled.
 - Conception may be incomplete.
- **Filing too late**
 - Anticipation or obviousness over inventor's own disclosure or that of others.
- **Diligence between conception and reduction to practice required to use conception date for priority.**

Timing Issues

4. After filing

- Begin marketing, mark products, etc.
- Information Disclosure Statement
 - Legal obligation to disclose any patent or publication known that would be deemed relevant to patentability by a reasonable examiner.
- Watch out for “new matter”: additional discoveries or improvements
 - don’t disclose to public;
 - make additional filing(s).
- Can collect royalties retroactively (after issue) to date of Notice of Infringement.
- Additional filings (PCT or other countries, non-provisional after provisional) must be made within 12 months.

Timing Issues

5. While Application Is Pending

- Statutory deadline for responding to USPTO actions is 6 months—must respond or application is abandoned. Typical deadlines are shortened to 3 months and delay requires payment of additional fees.
- Is your product still covered by the claims? Is there new matter? Continuation Applications must be made while the application is still pending.
- Monitor evolution of both your products and competition; is their product covered by your claims? Maintain a Continuation Application pending if you might need to tweak claims to cover an infringing product.

Timing Issues

6. Relation to Business

- Patent timeline can be slow: issue date is typically 2–5 years after filing.
- Don't hold up business while application is pending.
 - Success in the market may be useful in procuring patent rights.
 - Time to market may be important for market share.
- Some businesses (e.g., software) may be sold before the first patent issues.
- Others (e.g., pharmaceuticals, medical devices) care about the tail end of patent term due to long cycle for clinical trials and FDA approval.

After Examination

1. Before Issuance

- **Appeals:** can appeal claims that have been twice rejected to the Board of Patent Appeals and Interferences (BPAI) within USPTO.
 - (\$570 fees for two rounds with Examiner and judgment by BPAI.)
- **Interferences:** exist if the subject matter of a claim of one party would, if prior art, have anticipated or rendered obvious the subject matter of a claim of the opposing party, and vice versa (i.e., their priority dates are less than 12 months apart—either two applications or an application and an issued patent).

After Examination

2. After Issuance

- **Re-examination:** most commonly used in preparation for infringement suits, in cases of newly discovered relevant prior art. *Ex parte* to shore up validity, or *Inter partes* to proactively invalidate.
- **Re-issue:** to correct mistakes, can broaden claims in some limited cases.
- **Infringement suits:** in U.S. District Court, appealable to CAFC and Supreme Court.
 - Can invalidate one or more patents, issue injunctions, award damages, royalties, etc.
 - Much more thorough and expensive than any USPTO proceeding.
- **ITC proceeding**

What's New

1. Patentable subject matter

- *Bilski v. Kappos*, (561 U.S., 130 S. Ct. 3218 (2010)) reset rules with respect to what processes are directed to unpatentable “abstract ideas.”
- Business methods survive (barely); USPTO practice is still evolving.
- Money by itself is generally found to be abstract.
- Claiming software is still problematic; pure software (e.g., a numerical algorithm) is abstract, but exactly how much hardware or real matter must be in claim is still subject to interpretation.
- Gene-related patents are currently under court review and will probably be taken up by the Supreme Court soon. (“Laws of nature” and “natural phenomena” are not patentable, but how do you define them?)

What's New

2. Obviousness

- Findings of obviousness were made much easier by Supreme Court in *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007).
- Examiners used KSR to reject “everything” as obvious.
- Subsequent case law has returned some reason to the analysis; most recent UPSTO guideline revisions were published in September 2010.
- A key test of obviousness is now “predictable results.”
- Examiners must also show a “motivation to combine.”
- A high percentage of appeals include appeals of obviousness rejections.

What's New

3. Policy Changes at the USPTO

- During the Bush administration, patent examiners were incentivized to reject everything (nominally under the guise of improving the quality of issued patents). Rejection rates soared, and applicants became discouraged. Application numbers actually started to decline, and allowance rates declined.
- Current Director David Kappos (formerly of IBM) has changed many policies, and the examination process is becoming more applicant friendly.
- Interviews are encouraged (initiated by both examiners and applicants), and there is an express goal of reducing the number of actions per application, the pendency of applications, and the backlog of unexamined applications.

What's New

4. The “America Invents Act” (2011?)

- Passed 95–5 in the Senate.
- Pending in very similar form in the House
 - Current version at http://www.patentlyo.com/033011_america-invents-act-1.pdf.
- Some issues remain controversial; changes some key incentives to file early and often:
 - See, for example, <http://www.patentbaristas.com/wp-content/uploads/2011/04/Appendix.doc>.
- Introduces first-inventor-to-file priority.
- “Interference” proceedings are replaced by “derivation” proceedings (to determine who is real inventor).
- Provides more control over fees and budgets (USPTO is funded by fees it collects; fees cannot be diverted to fund other activities).
 - Introduces “micro-entity” (such as solo inventor) paying 25% of large entity fees.
 - Meanwhile, Congress diverted an extra \$100 MM in fiscal 2011 as part of spending “reduction” already passed.
- Tax avoidance (or deferring or reducing) strategies expressly unpatentable as statutorily anticipated.
- Priority examination for technologies “important to American competitiveness.”
- Pre-issuance submissions by third parties are allowed.