

Patents 101: Theory and Lab

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Why Should A Technology Entrepreneur Understand Intellectual Property?

- Your business will usually be built on some protected IP.
- You need to understand the implications of your competitors' IP.
- You can work more effectively with patent lawyers
 - It is easier for you to learn a little about writing a patent than for a lawyer to become an expert in your subject matter.
- Thinking about your patent claims will help your overall strategic planning:
 - Suggesting new fields of use
 - Defining sub-topics for possible out-licensing
 - Prioritizing additional feasibility studies.

A Patent Is A Social Contract

“Teach us what you have developed, so others can continue to improve on it, and we will give you a monopoly* for some period of time”

- Must be useful, novel, and non-obvious.
- Specification must be complete:
 - Must teach one of ordinary skill how to carry it out.
 - No trade secrets or hidden steps.
- Fixed lifetime:
 - Previously 17 years from issue date;
 - Now, 20 years from filing date.
- Maintenance fees get higher as patent gets older.

*Note that the patent gives you the right to EXCLUDE OTHERS from making, selling, or using the invention. It DOES NOT give you the right to use it if practicing your invention requires someone else's patented technology.

A Few Grubby Legal Details

- Inventorship issues
 - No *ex officio* inventors!
 - Each listed inventor must be able to point to at least one claim that was his creative contribution.
 - When in doubt, err on the side of inclusion, not exclusion.
- Prior art and duty of candor
- Bar dates
- Fees
 - Attorney's billings
 - Filing fees
 - Maintenance fees
 - Total is ~ \$10,000 for US filing and > \$100,000 for foreign filings.
- Documentation will be crucial if challenges arise later:
“A useless patent is an engineer’s merit badge; a valuable patent is a ticket to court.”

The Patent Application Process

- You write a disclosure that describes your invention as clearly and thoroughly as possible.
 - Research the prior art to satisfy yourself that what you have is novel.
 - “Teach away” from the prior art and/or show that the prior art teaches away from your invention.
 - Ideally, draft one or more claims so the lawyer can see what you consider the inventive concept.
 - Provide specific, detailed examples (*may be prophetic*).
- A lawyer or patent agent drafts the patent application and an experienced patent draftsman prepares drawings.
- Documents are filed with USPTO along with filing fees.

The Patent Examination Process

- In a year or so you receive an Office Action
 - Patent Examiner rejects all your claims and tells you why.
 - Draftsperson lists any objections to your drawings.
- Typical grounds for rejection:
 - Already covered by other patents
 - Claims are overly broad or vague
 - Specification is not ENABLING
 - Invention is “obvious” based on prior art alone or in combination.
- You respond with arguments rebutting the Examiner’s findings
 - *Usually* clarify (read: narrow) your claims.
- If you finally prevail, the USPTO issues a Notice Of Allowance.
- You pay the issue fee and the patent issues a few months later.

The Parts Of A Patent

- Abstract
- Specification
 - Background
 - Discussion of prior art
 - Objects of the invention
 - List of figures
 - Best mode of carrying out the invention
 - Examples
- Claims
- Drawings

Discussion of Background Art Is Your Chance to Seize the High Ground

- Recall your duty of candor. You must provide a copy of anything out there that MIGHT be relevant to assessing your patentability.
- Focus on the *closest* prior art. Explain very clearly why previous workers did not anticipate your invention. Look for ways to use their words against them.
- Compare your “objects” to those of the prior art patents. Were they clearly trying to solve a completely different problem than you have solved?

The Figures Are Important and Must Conform to USPTO Guidelines

- These are your best opportunity to teach what you have done.
- Make clear sketches and let a trained professional make the formal drawings.
 - Keep the drawings simple
 - Cartoons, rather than engineering drawings
 - Don't show unnecessary things like every nut and bolt!
- Note that “informal drawings” can be submitted with the initial application but you will need to submit “formal drawings” later along with an added fee.

Objects of The Invention

- Can be simple or elaborate – satisfies the requirement of “usefulness”.
- Important to differentiate your invention from similar inventions intended for clearly different purposes.
- Help to justify your breadth of claims.
- Helps to point out what you consider to be the invention.
- Often highly stylized and each patent agent has his own preferred style.
- To the novice they sound repetitive (just as the claims do).

The Specification Must Be **Enabling**

- You must spill your guts – no hidden steps, no trade secrets.
 - For example, if your patent involves a biologically mediated process you must show that the bacteria you are using are available to others.
 - If someone can later show that you concealed some critical detail, your patent can be ruled invalid.
- Best mode must be in there.
 - You can have many examples
 - You don't have to say which you like best.
- The examples also serve to broaden your claims
 - Show that a range of materials or conditions can be made within the scope of your invention.
- Again, this is your chance to lead the Examiner through the whole thought process to convince him that what you have is new and cool.

Some Defensive Strategies

- You can add a lot of things in the specification that anticipate what others might do.
 - Helps to justify the breadth of your claims.
 - Helps to make the case for usefulness.
 - Makes it much harder for your competitors to patent anything else. (The Examiner will tell them that their invention was anticipated by you!)
 - Note though that this can also be used against any later applications that you file, too!

Claims Are the Heart of Your Patent

- The claims define exactly what the invention is and will be the template used to determine if someone is infringing.
- They must be clear enough so that someone will know if he is infringing.
- Several kinds of claims:
 - Article
 - Composition of matter
 - Method.
- Method claims are inherently harder to enforce.
 - Ideally you want to be able to buy a competitor's product and show that it is infringing on your patent.

Claims Can Be Independent or Dependent

- Example of an independent claim:
 - **1. A motor vehicle having therein a radio receiver whereby occupants of said vehicle may be entertained while motoring.**
- Example of a dependent claim:
 - **2. The vehicle of claim 1 wherein said radio receiver operates on the AM broadcast band.**

Claim Language

Writing good claims is an art, but your lawyer can only do it right if you work with him. Conversely, a good lawyer can often broaden the claims dramatically.

- Scientists normally claim too narrowly because they are trained not to draw conclusions that are not backed up by experiments.
 - Claims are innocent until proven guilty.
- Engineers might claim too narrowly because once they have found the most elegant solution they can't imagine someone doing it in a less optimal way.
 - Optimal is in the eye of the beholder!

Divisionals and Continuations-In-Part

- Defensive strategies.
 - A way to prevent your own prior art from being used against you.
 - Useful in early-stage technologies where you are making rapid progress.
 - Note the new limitations on lifetime (every CIP in effect has a Terminal Disclaimer).
- Damage control.
 - You realize you didn't make your original claims broad enough.
 - Note the escalating costs.
- Forced divisions by the Examiner.
 - Examiner decides that you really have more than one invention.
 - “Apparatus and Method” is usually ok.
 - “Material and Method of Making” is usually ok.
 - If Examiner thinks you can make the material by other methods or the material can be used for other things, he can make you split them into separate cases. You don't lose anything, but fees go up.

Some Things You Can Do to Improve Your Chances of Success

We define success as the issuance of a US Patent with broad, enforceable claims that have monetary value, either to you or to a potential licensee.

- Think like an infringer.
- Think like a lawyer.
- Think like an Examiner.
- Think like a customer.
- Think like an investor.
- Think like your Licensing Executive.

Thinking Like an Infringer

- It is fair game for your competitors to look for gaps in your claim coverage. Would you pay for a ticket if you could stand right outside the fence and watch the show?
- They will likewise look for alternate methods for accomplishing the same ends.
- It is fair game for later inventors to invent something that infringes but is patentably novel in its own right (in other words, a fence inside of your fence!)
- Others might read your patent and focus on optimizing certain aspects, so it is often good strategy to include numerous examples including many that are sub-optimal, so the next guy doesn't know where to focus.

A good analogy is that you design a security system by “thinking like a burglar”.

Thinking Like a Lawyer

- Sometimes, the less said, the better.
- In your disclosure, you might want to say, “a paper was presented on 6/6/98...” rather than saying “a bar date exists...”
- You want to call preexisting work by others “conventional”, “traditional”, “commonly used”, “well-known”... don’t use the term “Prior Art” because that conveys a sense that you think it is close to what you have done.
- In other words, give the lawyer the facts but let him issue legal opinions.
- Avoid using the word “obvious” when describing your results – “surprising” is a much better choice!
- Don’t use phrasing that might paint you into a corner or imply that your thinking was narrower than it really is.
 - Say “one preferred embodiment...” rather than “the preferred embodiment...”.
- Bear in mind that if litigation arises, the whole paper trail may be subject to scrutiny.

Thinking Like an Examiner

- The Examiner won't be an expert in your subject but will have a basic technical background (BS/BE, possibly PhD).
- He will have done a search and turned up patents that may be more or less relevant, i.e., they sound sort of like what you have.
- Teach the Examiner what you have done, step by step, pointing out how and why you have improved over earlier technologies.
- Take the closest work and show why they didn't anticipate what you have done. Use their own words against them if possible. He will rarely focus on prior patents that you have discussed thoroughly.
- He will also likely do a search of your publications. If he finds something you have published that sounds pertinent and that you failed to supply up front, you will know his displeasure.
- When in doubt, supply more and let the Examiner decide whether or not it is relevant. It is in your interest for the Examiner to feel that you are dealing in good faith.

Thinking Like a Customer

- Define your claims in a way that can be enforced. A customer will only pay you for a license if he is sure your patent can effectively exclude others.
- Does your patent convey clear economic value and a way for both you and the customer to capture and share this value?
- Do your claims also cover less elegant (but cheaper) variations?
- Expect the customer to conduct due diligence and don't take it personally!

Thinking Like an Investor

If you are raising capital for a technology-based business, investors will perform their own due diligence and will examine your IP carefully from two perspectives:

- Your IP portfolio
 - Do you have broad patents with strong claims that will allow you to keep competitors at bay?
- Freedom to operate
 - Do others have patents that might limit your ability to go to market or might require you to pay for licenses?

Thinking Like Your Licensing Executive

- A patent can often have more value if it can be licensed exclusively to more than one customer.
- Well-written claims can help to delineate different fields of use without having to prosecute (read: pay for) numerous similar patents.
- If you are a small business, you might want to license pieces of your patent to others outside of your field.
- Study similar technology-based businesses to see how their patent portfolio supports their business model.
 - You might even find an obvious licensing prospect!