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THE IMPORTANCE OF PATENTS IN INTERNATIONAL COMMERCE — A PRACTICAL GUIDE

Introduction

As global commerce has grown over the past several decades , the creation of intellectual property in the private sector has correspondingly grown, as has the need for companies to protect this increasingly valuable corporate asset. The optimal way to do so is through a well organized and well executed program of drafting patent applications and then monitoring patents which have been granted.

In short, patents are the life blood of any technology company. Trade Secrets -

Trade secrets constitute a much broader category of company information compared to the company's technical intellectual property for potential patent applications. By way of example, trade secrets encompass all aspects of a company's activities (not only intellectual property) — marketing plans, customer lists, product pricing, strategic planning, hiring plans, different aspects of legal compliance, etc., etc.

The strength and legal importance of trade secrets of course depends on the value granted to this type of intellectual property by any individual country 's domestic legislation . That being said, as to protecting its trade secrets , a company will typically have all new employees sign an employment agreement, two important parts of which are (i) for the employee to agree that any discoveries I inventions he or she makes during the course of employment belong to the company, and (ii) not to disclose proprietary company information ("trade secrets") to third parties. A trade secret is essentially anything which the company treats as proprietary (often, though not exclusively, with a "company confidential" stamp on documents) . However, if the company is lax in its treatment of its proprietary information I trade secrets (such as willfully or negligently making public disclosures to third parties — either at public forums such as trade conferences, during business meetings , talking to the press, publishing papers or in any other way) , then the company is at risk of losing its legal right to continue to treat the information as a trade secret. The strongest legal protection given to trade secrets is normally not based on any domestic statute, but rather on due diligence by the company itself; i.e, its diligence in maintaining the trade secret. For this area of trade secrets it is critical for the company's (or university's) lawyers to know about trade secret protection in that country. There are of course statutes (and common law or civil law principles) which provide legal bases for a company to defend its trade secrets against theft or other illegal "expropriation". In brief, a company can fairly easily lose the legal protection granted by any country's courts to trade secrets if someone in the company structure inadvertently (or even willfully) discloses trade secrets to third parties. The relationship between a company's intellectual property ("IP") category of trade secrets and the company's patents is that when the typically annual process is held of deciding what IP the company wants to attempt to patent (as described below) , the IP that is not included in the patent application process for that year is maintained by the company as part of its IP trade secrets, and as such is

carefully protected (as described above) so that it retains its IP status. A plus in this regard is that the IP then is retained as proprietary to the company without the time limitation of a patent, but only as long as the company continues to treat this IP as a trade secret under relevant law.

Patent Applications

A company, in deciding which of its technical discoveries I ideas to patent, not only wants to have more robust legal protection for its IP trade secrets , but also wants to capitalize on the legal monopoly the law in a country (in the U.S., the Constitution in fact) grants to a patent holder for a set number of years. The reason that patents became enshrined in the U.S. Constitution (of 1786) is that the founders of the country wanted to encourage innovation to "kick start" the country's industrial development. Patents provide legal protection to new ideas that otherwise wouldn't be available — and thus serve as a significant incentive to individuals or to companies to create patentable ideas. The keys for an individual or company in deciding what ideas to patent are (i) to make sure that the idea is "patentable" (it is new, unique and not based on what is called "prior art" — i.e., ideas existing in the public domain anywhere in the world prior to a patent's filing). A key aspect of the patent process is for the company to ascertain (as well as it can) that the proposed patented product or process is indeed "new, unique and not based on prior art". This is accomplished by a world wide search for any published material related to the proposed product I process patent in order to test if the company 's product I process is indeed "new, unique and not based on prior art". In a word , the invention (patent claim) cannot be obvious in light of what others had done before (there are a lot of factors to look at to make this determination) . If by chance two or more patent applicants are working on the same patent application, the first to file would typically get priority over any subsequently filed patent- i.e., the filing date is very important.

If the potential patent is from a sole inventor or from a start up company, these two types of patent holders do not face a key threshold issue facing a larger company in the patent process — i.e., prioritizing which ideas currently being worked on within the company are most deserving of patent protection and hence should be given priority attention. Probably annually as part of the company 's budget process an amount is allocated for obtaining patents — and this process would involve both the appropriate business people and the patent lawyers (the business people explaining to the patent lawyers the company 's near future product development and marketing efforts) . As part of this winnowing process, priorities will be agreed upon so that the patent lawyers can in turn prioritize their efforts. The typical process is that every month the patent lawyer and the appropriate business person look at the recent invention disclosures within the company's technical labs (i.e., inventions in this subject area which the company's scientists have developed over the past several months) . In deciding which of these should become part of a patent application process, the basic question is to determine if the company is going to use the patent in any of its commercial products in the foreseeable future — if the answer is "no" then that IP is retained as a trade secret and not put into any current patent appli-

cation process. Of course, if IP is put into a patent application that IP is disclosed to the world and hence is lost as protected company IP trade secret, with the exception that if the patent holder does not want to file for foreign patents (for whatever reason) it can ask the US Patent Office that its patent application not be published (i.e., be kept conf idential).

There are, broadly speaking, two types of patents — process patents and product patents. The former, as the name implies, is a patent to cover an industrial (probably manufacturing) process. The latter is to cover products themselves. But processes and products evolve , so it's important in patent applications to be specific enough in explaining the invention ("claim") in the patent so the patent examiner will grant the patent on the basis of suff icient specificity and yet sufficiently broad to keep others out of that area (and possibly even to be able to include the company's future process or product developments I enhancements to the claim in the patent, dictated by future market developments that were of course not clear at the time of the application). In short, writing patent applications is a kind of art form. The famous American judge Learned Hand put it as follows — "At issue is a claim in a patent, and I've concluded it is either the highest form of writing known to man or total nonsense".

The next step for either a proposed process or product patent is writing that year 's agreed upon set of patent applications. This of course is a critical step since the claims made in the patent resulting from the application would be the basis for defending any future claim that the patent was invalid or that the patent was not broad enough to cover a particular product or process in the future that had become important as the market around that process or product developed (which of course had not been clear at the time of the patent application).

A process patent often has an inherent problem of being difficult in determining if the patent is being infringed. This is not the case with a product patent — since the product is sold in the market and the patent holder can easily exam ine it. However, a process patent can be in the bowels of the purported infringer 's machinery and hence difficult to get access to in order to make an infringement determination. That is, it is difficult for the patent holder even to know the alleged infringer's manufacturing processes. Any infringement determination may require a great deal of legal due diligence — which could be difficult to do if the alleged infringer is outside the U.S. This problem may cause a company to treat potential process patents as trade secrets, and not even go to the bother of filing a patent application. A severe (as in catastrophic) consequence of deciding not file a process patent for a trade secret improvement in a manufacturing process (because of the above difficulties even if a patent were issued) would be if another company did file and then obtained a patent for the same process, and that process was used in the first company's own manufacturing process, the first company would now be infringing the other company's new process patent in order to make its (the first company's) own products.

If there is a new technology, the initial patent(s) filed on the technology by the company are called umbrella patents since they are so broad (a new product after all) that they cover the entirety of that product's market, and hence no other company can even enter the market for the duration of that initial umbrella patent(s). And, there is no legal requirement for such a company to license any third party for the duration of the umbrella patent (or thereafter for that matter), However, the company holding

such a patent will of course continue to make technical developments to the initially patented technology (since it knows the product and market better than anyone else) and is continually filing subsequent patents, which though not as broad as the initial umbrella patent could provide effective (though narrower) patent protection (if done correctly) for many years.

Patent Application is an Investment

A company, when developing its patent portfolio , has to bear in mind that patent applications are a form of company investment ; there is much inherent uncertainty in the process, due in no small part to the virtual impossibility of knowing for certain if there is (somewhere in the world) prior art.

The costs of filing patents mount up fairly quickly. For example, if you count just one patent lawyer (and larger companies have a whole staff of patent lawyers), that lawyer will typically file approximately 10 applications a year (costing $2500 in the U.S. per application). Then there is the matter of filing in other countries. Deciding which countries in which to file involves a marketing determination of where in the foreseeable future are the company and its competitors (probably) going to be manufacturing and selling the patented product. This often boils down to a certain grouping of countries (EU, Korea, Japan , Taiwan, Canada and Australia}, and increasingly such countries as China (now probably a certainty}, Brazil, Mexico, India, etc.

If the company files (for say $2500 per application) all 10 of only the one patent lawyer ‘s annual work product in only the 6 named countries above (using foreign counsel and dealing with responses from foreign patent examiners), the company can expect to pay say $3000 per foreign patent application for foreign counsel and foreign patent examiners , it quickly becomes apparent that there is "real money" involved in this entire U.S. and foreign country patent application process. And the above hypothetical is only the work product of a single company patent lawyer.

Counterpart Patents

Once a patent has been issued (for example, in the U.S.}, then the company as noted above has to make a decision of what other countries it should file "counterparts" to this patent. There are three issues in this regard. First is what the company believes are the immediate and near future geographic markets for products or processes cover the the original (U.S.) patent — those countries should be where the patent should also be filed. Second, there are expenses involved in doing this (as explained above) — the initial f ee to file the patent and annual fees thereafter (all of which have to be budgeted in by the company). Third, the company has to have some assurance that a patent in that country would even be worth anything — i.e., if the company became aware of an infringer of that patent, is that country ‘s legal I political system strong enough to follow "the rule of law" and at the initiative of the company patent holder punish the infringer and permit the company to collect damages from the infringer for its patent infringement.

Patent Licensing

Typically a patent holder is under no obligation to license any of its patents to any third party. There are except ions to this "rule", as discussed below, when courts could mandate that a patent holder license third parties — due to the patent holder's illegal (typically anti competitive) treatment of its patents.

If a patent holder decides to license a third party, the resulting patent license agreement would permit the licensee to manufacture the product protected by the patent (either process or product) in a specific country (or countries) and to sell in the country of the license's manufacturing. As to sales in countries outside the country of the licensee's manufacture, it could create antirust problems for the patent holder if it put into the patent license agreement that the licensee could not sell in specified countries (typically in countries where the patent holder wants to sell the product). Instead, the patent holder should include in the license agreement a provision stating that it does not waive its patent rights in listed countries. This will typically end up with the same result as would a legally dangerous prohibition of the licensee selling into listed prohibited countries. This is one aspect of the general rule that a patent should always be looked upon commercially as a shield and not as a sword. This "rule" is particularly true if the patent holder has a strong market share in the industry and markets in question.

A few licenses are "patent and know how" license agreements (internationally if the licensee is from a developing country) whereby the know how is transferred to the licensee both by way of document transfer and by technical exchange meetings (often both at the licensor 's facilities and at the licensee's) where technical information is transferred verbally. Domestically this is most often the form of a license when two companies form a "daughter company" and have to transfer patents and know how down to it.

With any license agreement (either patent only or patent and know how) between companies of different countries, the licensor must make certain that the license agreement is structured in full compliance with its country's export control laws (which typically include exports of technology). One line of argument in license agreements with quantity limitations placed upon the licensee — these should be legal since without the license agreement, the licensee wouldn 't be able to make and sell anything.

In some (if not many) industries, large companies have so many patents that they conclude that it is more rational to enter into broad cross licensing agreements with its larger competitors rather than have continuing (probably endless) litigation on various and sundry patents; trying to determine in each case which patents are infringing and which are being infringed. Typically these agreements are royalty free. Or, two companies may enter into a cross licensing agreement whereby one company grants a license (to manufacture and sell) under its patents to the other party in certain product markets in exchange for that other party granting the same type of manufacturi ng and sale license in other product markets. The history in the U.S. for cross licensing goes back to the 'SO's when AT&T was under court order to grant licenses on nondiscriminatory terms under its transistor patents. AT&T in turn insisted on cross licenses to do so, as a result of which the U.S. electronics and telecom industries were cross licensed. Outside those industries in the U. S. cross licensing has been uncommon.

Miscellaneous

A. Non Use. If a patent is granted, but then not used by the patent holder (i.e., the patent holder simply sits on it), this is typically not illegal. However, in India if a company owns a patent but doesn't use it, then an Indian company can make and sell the product without being accused of patent infringement.

B. Patent Pooling. Patent pooling is when companies with patented technologies establish a "one stop shop" licensing mechanism that facilitates access to complex technologies with high levels of patenting activity. It is important that such pools provide fair, reasonable and non — discriminatory access to all who desire a license. However, since such pools entail a high degree of collaboration among competing patent owners antitrust concerns have to be dealt with — since a patent pool licensing arrangement could harm competition among companies which (absent the pool) would have been actual or potential competitors. Challenges to competition arise if patent holders use licensing arrangements to block competitors from

entering the market or to avoid being blocked by them. Hence, there would have to be a positive aspect of any pool in the market place (i.e, the impact would have to be positive, mitigating the effects of complex patent "thickets" owned by the different companies which without the pool would stifle or at least impede competition).

C. Standards Committees. Standards committees exist at the national and international levels to establish product standards in different markets. If the relevant standards bureau agrees that a patent is a "standard" then there is mandatory licensing of that patent. Also, it is important that in establishing standards , (typically larger) companies not use the standards (based on patents) to disadvantage smaller firms or new entrants to the market.

D. Mandatory Licensing. Mandatory licensing is rare. Typically mandatory licensing is a consequence of a patent holder engaging in illegal activity. To have this situation you need to have a large company that has skated too close to the edge as to patent and antitrust legal compliance. A patent owner gets into legal trouble by using its patent portfolio to facilitate antitrust violations. As two historical notes, in the 1920's the U.S. Congress mandated that any patents in the then nascent airplane industry had to be subject to mandatory licensing. After WW II, Xerox was judged to have engaged in illegalities so a federal court ordered it to grant licenses.

E. Country Rankings (all numbers rounded to nearest 1,000 and all for 2018)

Top 10 Patent Applications

China	—	1,542,000
U.S.	—	597,000
Japan	—	314,000
South Korea	—	210,000
European Patent Office	—	174,000
Germany	—	68,000
India	—	50,000

Russian Federation	—	38,000
Canada	—	36,000
Australia	—	30,000.

Top 10 Patents Granted:

China	—	432,000
U.S.	—	308,000
Japan	—	195,000
European Patent Office	—	128,000
South Korea	—	119,000
Russian Federation	—	36,000
Canada	—	24,000
Australia	—	17,000
Germany	—	16,000
India	—	14,000.

There are a few observations that should be made from the above numbers. The first and probably most important is that effectively to analyze these numbers one would first have to be able to ascertain (i) how easy or how difficult it is to file a patent application (either as a foreigner or as a citizens of that country) and (ii) if there are meaningful differences in the totals between foreigner and citizen filings. It would then be meaningful to know the average length of time between filing and eventual grant. The larger this time period is, then arguably in a rapidly technologically developing industry the eventual grant may be of less value than a patent granted sooner. In any event, of key importance is the commercial strength of the company (or the strength of the university) being granted a patent. In short, one would have to go beyond the face value of the above numbers to obtain the true value of patents granted by any of these countries.

There are two other ways of ranking country numbers which are helpful in determining the comparative strength of any country's intellectual property (all numbers rounded to the nearest 100 and all for 2018):

Top 10 Patent Applications per Gross Domestic Product (GDP)

South Korea	—	8600
China	—	6200
Japan	—	5100
Germany	—	1900
Switzerland	—	1800

U.S.	—	1600
Finland	—	1300
Denmark	—	1300
Sweden	—	1200
Netherlands	—	1100.

Top 10 Patent Applications per million population

South Korea	—	3100
Japan	—	2000
Switzerland	—	1100
China	—	1000
Germany	—	900
U.S.	—	900
Denmark	—	600
Sweden	—	600
Finland	—	600
Netherlands	—	500.

For another view of comparative patent strength, the following are the top patent applicants (companies) for the three years 2013 — 2015: Canon (Japan), Samsung Electronics (South Korea), State Grid Corporation of China (China), Mitsubishi Electric (Japan) , IBM (U.S.), Toyota (Japan) , Huawei (China), Toshiba (Japan), LG Electronics (South Korea) and Robert Bosch GmbH (Germany).

Of course, the above listing does not contain patent applicants which are smaller companies an which could have (either individually or in the aggregate) an important impact on the strength of any country. That being said, this listing does show the strength of East Asia (8 of the 10 companies), which is indeed impressive.

F. Quest for World Patent Law Harmonization. The attempts to establish an international system for the protection of intellectual property date back to two late 19th century treaties — the Union of Paris for the Protection of Intellectual Property (1883) and the Berne Convention for the Protection of Literacy and Artistic Works (1886). From that early beginning until today, nearly all countries now recognize the value of intellectual property and the corresponding need to have clear laws to protect it.

The post World War II impetus behind clarifying (and hence strengthening) intellectual property rights, in the area of patents, was initially done via the 1967 World Intellectual Property Organization Convention ("WIPO"), established as a self funding agency of the U.N. WIPO's charter was "to lead in the the development of a balanced and effective international intellectual property system". On the basis of WIPO, the 1970 Patent Cooperation Treaty ("PCT") was then concluded , which established a unified procedure for filing patent applications in each of the contracting states (filing an inter-

national application under PCT acts as a world wide application in member countries). For example, by filing for protection under the PCT within one year after filing in the U.S., an applicant is given 30 months following the U.S. filing date in order to file in any of the approximately 150 member countries. Of course, a PCT application is not the grant of a patent since there is no such thing as an international patent. Rather, since PCT merely establishes a filing date for all contracting states, this must be followed up by patent applications in each contracting state or region (for example, the E.U.). Then in 1994 signatories to the post World War II General Agreement on Tariffs and Trade ("GATT"), the predecessor to the World Trade Organization ("WTO"), signed the Agreement on Trade Related Aspects of Intellectual Property Rights ("TRIPS"), which for the first time introduced intellectual property laws into the multilateral trading system. Ratification of TRIPS was a requirement of WTO membership; by which strict intellectual property laws were mandated for each member state (though developing countries were given additional time to implement applicable TRIPS mandated changes to their national patent laws) . TRIPS was undoubtedly the most important multilateral instrument for the globalization of intellectual property laws, since in a number of areas it represented significant improvements in signatories' attempts to reach better harmonization of world patent law (as represented by signatories' domestic patent laws). That same year, for example, the U.S. passed the Uruguay Round Agreement Act, which made several changes to then existing U.S. patent law in order to address points required by TRIPS.