An Exploration of Patent Matters Associated With Emerging Technologies—Part 2

But … What Does Flight Have to do With It?

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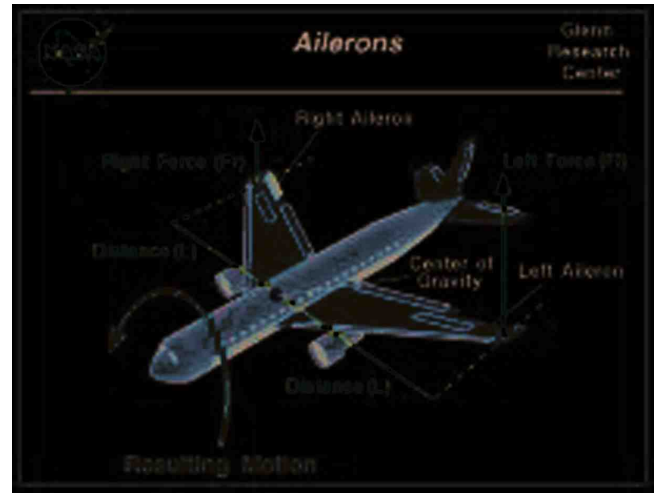

Emerging technologies will continue to have a significant impact on all markets, but in particular on metal finishing markets. This fact has been recognized and addressed by the AESF with the formation of an "Emerging Technologies" Committee chaired by Dr. Eric Brooman, and Phillip Miller. The purpose of this committee is to identify potential emerging technologies that will impact AESF members. Under the leadership of Eric and Phillip, the focus encompasses technology push and market pull. To date, the Emerging Technologies Committee has spun-off two sub committees—Nanotechnology and Metal Removal Processes. A third committee is in the works dealing with MEMS. These efforts regarding emerging technologies are aligned with AESF Research Board grant selection and funding activities.

An important component of emerging technologies is the intellectual property associated with them—in particular patents. While the U.S. patent system was mandated in the constitution of the United States, there is considerable confusion regarding the overall purpose and operation of the same. This column continues ideas associated with the U.S. patent system to provide a perspective for emerging technologies.

3.0—U.S. Patent Statute

3.1—Historical Development

The initial Patent Act of 1790 created a system based on patent examination board headed by the Secretary of State (Thomas Jefferson), Secretary for the Department of War (Henry Knox), and Attorney General of the U.S. (Edmund Randolph).[1] They referred to themselves as the "Commissioners for the Promotion of the Useful Arts," a clear indication of their perceived role. During the three years of the existence of this first patent act, approximately 57 patents were issued.

Due to the difficulties in balancing the work between the respective departments and the increasing demands of the patent work, a simple registration system was established in the Patent Act of 1793 and five additional acts until the Patent Act of 1936, which generally created the basis of the modern patent system.[2,3]

3.2—Requires an Inventor

U.S. patent law requires that patents be issued to an inventor or group of inventors.[4] This is in contrast to some other patent systems in the world where patents may be issued to corporations without a named inventor. Under U.S. patent law, the rights in the patent may be assigned to entities, such as corporations, other than individuals,[5] and in fact this is usually the case.

3.3—Inventions Patentable

Patentable inventions are defined as: "…any new and useful process, machine, manufacture, or composition of matter, or any new improvement thereof…"[6] To sum it up, patentable matter includes "anything under the sun made by man."[7]

3.4—Invention Must Be Fully Described

The specification of the patent application must contain a description in sufficient detail to: "…enable any person skilled in the art …to make and use the same."[8]

This requirement may be thought of as the full disclosure or enabling requirement. Recall, it is part of the explicit contract for granting the limited monopoly to said invention. The basis for the patent examiner to determine full disclosure is the "mythical" person of ordinary skill in the art.

3.5—New and Useful Requirement

In order to obtain a patent on the subject matter described previously, the invention must be useful, new, not previously patented, not described in a printed publication, or not offered for sale for at least one year prior to the date of the U.S. patent application.[9]

3.6—Non-Obvious Subject Matter

In addition to being new and useful, the invention must not be obvious in light of the prior art either alone or in combination: "…to a person having ordinary skill in the art."[10]

Again, note the basis for the examiner in determining non-obviousness is the "mythical" person of ordinary skill in the art.

3.7—Questions (continued from 2.4)

(1) Should special statutory laws be developed to cover new subject matter associated with emerging technologies?
(2) Will new meanings to new and useful be required?
(3) Will the evolving definition of person having ordinary skill in the art keep up with developments in emerging technology?

4.0—A Delicate Balance

4.1—Doctrine of Equivalents

From judicial precedent, a Doctrine of Equivalents has emerged in the U.S. patent system expanding the patented invention beyond the literal description in the patent claims. The Doctrine of Equivalents evolved to prevent: "…the unscrupulous copyist to make unimportant and insubstantial changes…"[11] in order to claim around the protection granted to an otherwise valid patent. The Doctrine of Equivalents maintains the incentive for inventors to fully disclose their invention by obtaining a patent. A test for equivalency suggested by the court involves: "…persons reasonably skilled in the art."[30]

Again, the "mythical" person of ordinary skill in the art is invoked.

4.2—Prosecution History Estoppel

In order to provide balance between a Doctrine of Equivalents allowing too much expansion of the original patent, Prosecution History Estoppel prevents inventors from narrowing their claims during its prosecution at the U.S. Patent & Trademark Office and then subsequently re-capturing the original breadth in order to claim infringement by a later patent.[12] Prosecution History Estoppel provides a mechanism for recognizing and rewarding significant and unanticipated improvements made by subsequent inventors.

4.3—Foreseeability Bar

A delicate balance must be maintained between the Doctrine of Equivalents and Prosecution History Estoppel in order to provide incentives for the first inventor as well as subsequent improvers. A new doctrine, The Foreseeability Bar, has been suggested to balance the incentive for first inventor protection *vis-à-vis* subsequent inventor improvements. More specifically, an "equivalent" cannot be claimed if it were not claimed in the original patent and would have be foreseeable to a person of ordinary skill in the art. In this manner, the public notice required for both disruptive and incremental inventions[13] may be maintained. The proposed bar would work in concert with the statutory and common law precedent based on the person reasonably skilled in the art.

4.4—Questions (continued from 3.7)

(4) Are the Doctrine of Equivalents, Prosecution History Estoppel, and a proposed Foreseeability Bar applicable to emerging technology?

5.0—The Evolving Patent System

5.1—A One Size Fits All Patent Statute

Generally speaking, the patent statute does not distinguish between different technologies or industries.[14] Exceptions include the special obviousness standard for biotechnology related art.[15] Biotechnology patents have grown very lengthy, reaching thousands of pages in some cases. Undoubtedly, special examination rules are required for patents in this technical area.

In a noteworthy case, special industry protection has been enacted by the congress, specifically the Semiconductor Protection Act. This "action" resulted from six years of debate, is extremely complicated, and has only been cited one time![16] The efficacy of this special act is certainly in question.

5.2—A Technology Specific Common Law

In terms of common law derived from judicial precedent, the patent system has been clearly shown to be technology specific.[33] This is evident in the interpretation and definition of the person having ordinary skill in the art. This "mythical" person will be strongly dependent on the maturity and prior art resident within a specific field.

5.3—Questions (continued from 4.4)

(5) Will special patent application examination practices be required for emerging technology inventions?

(6) Should there be a special art unit for emerging technology inventions?

(7) Should the Congress proactively legislate patent statute to cover emerging technology patent issues?

(8) Are the courts adequately prepared to deal with emerging technology patent issues?

(17) Will judicial precedent keep pace with emerging developments in technology in order to promote technological innovation?

6.0—Summary

6.1—Back to Kill Devil Hills

One hundred years ago, a flight of 120 feet was demonstrated, or in terms of the patent system, the invention of a flying machine was "actually reduced to practice." Subsequently, an improvement patent was issued on the invention of a flying machine. The key question in subsequent patent litigation was how broadly should the original patent be interpreted and what, if any recognition should be provided the "improvement" invention? In spite of significant patent battles, today, military and commercial aviation are commonplace. A question for today might be:

(Continued from 5.3)

(18) Could the technological advance of aviation been promoted any more efficiently then with our current patent system?

6.2—Person Having Ordinary Skill in the Art

The patent system consists of statutory law based on congressional legislation, an examination procedure, and common law derived from judicial precedent. The patent principle "person having ordinary skill in the art" finds itself in the patent statutory law, examination rules, common law, and in proposed fixes to the patent system. This principle has served the patent system very well. The key questions are

(Continued from 6.1)

(19) Will this principle continue to serve the patent system during the technological advances associated with emerging technologies?

6.1—Theories of the Patent System and Innovation

The fact that the U.S. Patent System plays a dramatic role in technological innovation can hardly be disputed. As recently reviewed,[12] a number of models have been proposed defining the relationship between the Patent System and technological innovation, including: 1) the prospect theory,[17] 2) monopoly theory of J. Schumpeter,[18] 3) competitive innovation,[19] 4) cumulative innovation,[20] 5) anticommons,[21,22] and 6) patent thickets.[23] These models seem to work well for specific industries or for specific technologies.

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(20) What will be the impact of the increasing volume and complexity of nanotechnology related patents on the patent system (*i.e.* statutory law, examination, and common law)?

(21) What modifications are required for the patent system (*i.e.* statutory law, examination, and common law) to effectively and efficiently promote technological innovation as related to nanotechnology?

These columns, Parts I and II, have attempted to provide information on pat-

ents. From my experience, there is considerable confusion and misunderstanding regarding patents and the purpose of the U.S. patent system. Hopefully, with improved understanding, better and more informed decisions can be made regarding one's patent portfolio.

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