Patents

Charles A. Garris, Jr.
Professor of Engineering
Department of Mechanical & Aerospace Engineering
George Washington University
What is a Patent???

- A **grant made by a government** that confers upon the creator of an invention the sole **right to exclude others** from making, using, and selling that invention for a **set period of time**.
In 500 BC, in the Greek city of Sybaris (located in what is now southern Italy), "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."

In England grants in the form of “letters patent” were issued by the sovereign to inventors who petitioned and were approved: a grant of 1331 to John Kempe and his Company is the earliest authenticated instance of a royal grant made with the avowed purpose of instructing the English in a new industry.

The first Italian patent was actually awarded by the Republic of Florence in 1421. They issued a decree by which new and inventive devices, once they had been put into practice, had to be communicated to the Republic in order to obtain legal protection against potential infringers. The period of protection was 10 years.
Characteristics of US Patents

- Over 8.4 Million U. S. patents have been issued since 1790.
- 253,155 US Patents issued in 2012.
- A patented invention must be novel.
- A patented invention must be non-obvious.
- A patent is good for 20 years from the time of application.
- A patent is issued to the individual inventor and not to a company.
- Obtaining a patent in the United States usually takes 18 to 24 months and can be expensive.
- Many companies view a patent portfolio as essential.
Patent Fundamentals

- Right to Exclude
- Best Mode
- Information Disclosure
- Inventorship
- Term of Patent
- International Issues
- Internet access to literature
“The Congress shall have Power to promote the Progress of Science and useful Arts, by securing limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries”
Thomas Jefferson

“If nature has made any one thing less susceptible than all others of exclusive property, it is the action of thinking power called an idea... Inventions then cannot, in nature, be a subject of property.”

However:

“Society may give an exclusive right to the profits arising from them, as an encouragement to men to pursue ideas which may produce utility...”
Abraham Lincoln

“...The patent system added the fuel of interest to the fire of genius, in the discovery and production of new and useful things.”

Second lecture on Discoveries and Inventions, 1859.
Thomas A. Edison

- 1,093 Inventions
- Founder of Industries: Electric power, lighting, electric automobile propulsion, batteries, sound recording, motion pictures, rubber, mining, etc.
- Designed using the Patent Gazette
- "Every good man was being driven out of business by fear of the patent sharks"
Patents Issued per Year

Factors for Growth

- Standards of Inventiveness
- U. S. Court of Appeals for Federal Circuit
- Importance of patents for competition
Propositions on the Importance of Patents for Engineering Design Education

- **Optimal Design is an Integrative Process**
- **Innovation in a litigious society can be dangerous**
- **The ethics of innovative design are intricate**
- **Patent rights are valuable assets**
Optimal Design is an Integrative Process

1675: Sir Isaac Newton

“If I have ever seen further, it is by standing on the shoulders of Giants”.

Patent Litigation

- **NTP v. RIM (Blackberry)**
  - In order to avoid injunction, RIM settles for $612 Million. NTP patent later invalidated by USPTO. (2006)
  - NTP Accused of being a “patent troll”

- **Apple v. Samsung**
  - Apple awarded more than $1 Billion

- **Carnegie Mellon University v. Marvell Technology**
  - CMU Prof. Jose Moura & Student Alek Kavcic invented a system that increased the accuracy with which hard-disk drive circuits read data.
  - CMU awarded $1 Billion +
Innovation in a Litigious Environment can be Dangerous

- Tec Air vs. Denso - $25.2 Million
- Steelcase vs. Haworth - $211.5 Million
- Polaroid vs. Kodak - $1 Billion +
Ethics of Innovative Design are Intricate

**IS IT ETHICAL TO DESIGN AROUND A PATENT?**

- "Designing around" is a Constitutional mechanism "to promote the Progress of Science in the Useful Arts"
- Rich: Roton Barrier vs. Stanley Works: "'Designing around' is the stuff of which competition is made and is supposed to benefit the consumer"
Patent Rights are Valuable Assets

- Engineers can become wealthy through exercise of their patent rights; Example: Jerome Lemelson
- Availability of patent rights will ameliorate "pipeline issue" for engineering.
- Conflict of Interest issues.
U. S. Patent Numbers
Article 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 (§35 United States Code)
Article 102

A person shall be entitled to a patent unless —

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or

NEW

“(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention; or

A person shall be entitled to a patent unless— NEW
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Article 102

§ 102 Conditions for patentability; novelty and loss of right to patent
A person shall be entitled to a patent unless—

(d) the invention was first patented or caused to be patented, or was the subject of an inventor’s certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor’s certificate filed more than twelve months before the filing of the application in the United States, or
Article 102

§ 102 Conditions for patentability; novelty and loss of right to patent
A person shall be entitled to a patent unless—

(e) the invention was described in —
   (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or
   (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language; or

(f) he did not himself invent the subject matter sought to be patented, or
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(g)(1) during the course of an interference conducted under section 135 or section 291, another inventor involved therein establishes, to the extent permitted in section 104, that before such person’s invention thereof the invention was made by such other inventor and not abandoned, suppressed, or concealed, or (2) before such person’s invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
On-Line Searching

- U. S. Patent Office ($3./pdf)
  - www.uspto.gov
  - http://patft.uspto.gov/

- GOOGLE (free PDF’s)
  - http://www.google.com/patents

- DELPHION (Better graphics, $3.00/pdf)
  - www.delphion.com
Searching at Patent Office

- Public Search Room
  Madison Building East
  600 Dulany Street
  Alexandria, VA 22314

Info: 571-272-3275
Conclusions

- Connection between patents and innovation known to Jefferson, Lincoln, Edison, etc. but forgotten in academia.
- Patents bring to academia the realities of industry.
- Patents enable ethics in a highly competitive industrial environment to be comprehensively treated.
Conclusions

- INTERNET provides easy access to patent literature.
- Patents are becoming exponentially more important in industry.
- Engineers who innovate should be provided education on patents for their own benefit, and for that of their employer.