

# ME 370: The Mechanical Engineering Profession

Lecture 04: Introduction to Intellectual Property

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## Purpose

Define intellectual property (IP), distinguish the four types of intellectual property, and give examples of each type.

## Video Segments

1. Introduction to Intellectual Property
2. Introduction to Patents
3. Utility Patents
4. Copyright
5. Trademarks and Trade Secrets

# References

1. United States Patent and Trademark Office  
[www.uspto.gov](http://www.uspto.gov)  
<http://www.uspto.gov/trademarks/basics/definitions.jsp>
2. David Douglas and Greg Papadopolous, *Citizen Engineer*, 2010, Prentice Hall, Chapter 12
3. <http://www.copyright.gov>
4. Copyright Term and the Public Domain in the United States  
<http://copyright.cornell.edu/resources/publicdomain.cfm>
5. Creative Commons alternative to copyright  
<http://creativecommons.org/>
6. Trademark Basics  
<http://www.uspto.gov/trademarks/basics/>
7. Trade Secrets Basic FAQ:  
<http://www.nolo.com/legal-encyclopedia/trade-secret-basics-faq-29099.html>

The concept of intellectual property requires the belief that you can own the right to use ideas or to prohibit others from using those ideas.

MAY 23, 2014 | BY ADI KAMDAR ([/ABOUT/STAFF/ADI-KAMDAR](#)) AND DANIEL NAZER ([/ABOUT/STAFF/DANIEL-NAZER](#)) AND VERA SOROKIN ([/ABOUT/STAFF/VERA-SOROKIN](#))

## Senator Leahy Kills Patent Reform (For Now)

Patent reform suffered a massive setback today when Senator Patrick Leahy, as chair of the Judiciary Committee, [announced](http://www.leahy.senate.gov/press/comment-of-senator-patrick-leahy-d-vt-chairman-senate-judiciary-committee-on-patent-legislation-taking-patent-reform-off-the-agenda) (<http://www.leahy.senate.gov/press/comment-of-senator-patrick-leahy-d-vt-chairman-senate-judiciary-committee-on-patent-legislation-taking-patent-reform-off-the-agenda>). "We understand that other senators—Chuck Schumer and John Cornyn—were still working hard to reach a bipartisan agreement to release a new bill. Leahy stepped in to kill the process."



## This Is How the Patent Trolls and Trial Lawyers Won

Sam Gustin @samgustin | May 24, 2014

For over a year, intellectual property reform advocates and their allies in Congress have been trying to [advance legislation](#) designed to crack down on so-called patent trolls, which are firms that don't build products, but rather seek to extract license fees or legal judgments from other companies. Until recently, prospects for reform appeared good, as lawmakers honed legislation that would curb the worst kind of patent troll abuse.



The early morning sun rises behind the US Capitol Building in Washington, DC.

Mark Wilson—Getty Images

# Four Types of IP

1. Patents
2. Copyrights
3. Trademarks
4. Trade secrets

## Introduction to Patents

ME 370: Intellectual Property Notes

Question:

Where are patents first mentioned in U.S. Law?

Question:

Where are patents first mentioned in U.S. Law?

Hint:

Question:

Where are patents first mentioned in U.S. Law?

Hint:



## Article 1 of the US Constitution

We the People of the United States, in Order to form a more perfect Union, ... establish this Constitution for the United States of America.

“Section 8, The Congress Shall have the Power ...

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”

## Definition

"A patent is an intellectual property right granted by the Government of the United States of America to an inventor 'to exclude others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States' for a limited time in exchange for public disclosure of the invention when the patent is granted."

Source: <http://www.uspto.gov/patents/>

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Source: <http://www.uspto.gov/patents/>

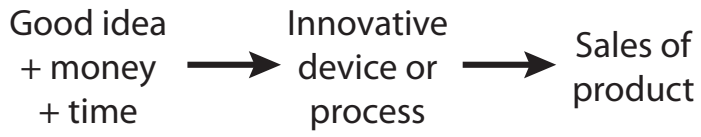
## Owning a patent does not give you the right to use your invention

From USPTO.gov

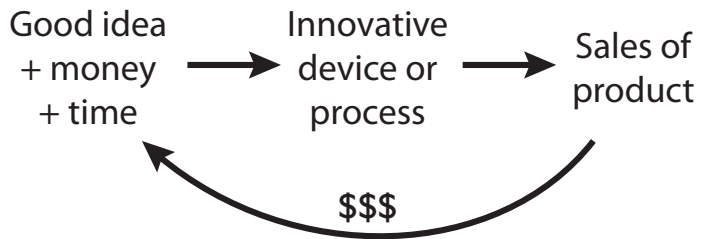
"What is granted is not the right to make, use, offer for sale, sell or import, but the right to exclude others from making, using, offering for sale, selling or importing the invention. Once a patent is issued, the patentee must enforce the patent without aid of the USPTO."

[http://www.uspto.gov/patents/resources/general\\_info\\_concerning\\_patents.jsp#heading-2](http://www.uspto.gov/patents/resources/general_info_concerning_patents.jsp#heading-2)

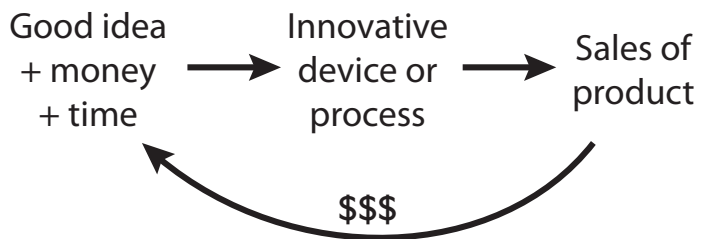
# Patent theory



# Patent theory



# Patent theory



Patents are designed to protect this feedback

# Types of Patents

1. Utility patents  
provisional and non-provisional
2. Design patents
3. Plant patents  
Provisional and non-provisional

# Types of Patents

1. Utility patents  
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2. Design patents
3. Plant patents  
Provisional and non-provisional

In 2013, USPTO received about 609,052 patent applications (all types). 571k of those were utility patent applications.

609k/year = 11712/week = 2343/day (5 days/wk)

<http://www.uspto.gov/about/stats/>  
[http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us\\_stat.htm](http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm)

# Utility Patents

## Provisional

- ▶ Establishes a starting date for a one-year period to complete the filing
- ▶ Allows you to claim "Patent Pending"
- ▶ Is cheaper than non-provisional, at least initially

## Non-provisional

- ▶ Requires a complete application
- ▶ Filing date marks the date of your disclosure, and begins the examination process by USPTO

<http://www.uspto.gov/patents/resources/types/utility.jsp>

# Utility Patents

ME 370: Intellectual Property Notes

## Utility Patents

**“Utility patents** may be granted to anyone who invents or discovers any new and useful process, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof;”

Source: <http://www.uspto.gov/patents/>

## Design and Plant Patents

**“Design patents** may be granted to anyone who invents a new, original, and ornamental design for an article of manufacture; and  
**Plant patents** may be granted to anyone who invents or discovers and asexually reproduces any distinct and new variety of plant.”

Source: <http://www.uspto.gov/patents/>



# What can be patented?

A utility patent can be granted for something that may be

- ▶ A process
- ▶ A machine
- ▶ An article of manufacture
- ▶ A composition of matter (e.g. a material)
- ▶ An improvement in any of the above

These criteria do not apply to design and plant patents.

<http://www.uspto.gov/inventors/patents.jsp>

# What's Patentable?

Methods, devices, systems, business procedures, software, and improvements to existing technologies can all be patented.

Requirements:

- ▶ Novel: invented by you, and not known by others.
- ▶ Must be non-obvious.
- ▶ Must be useful.

Source: Douglas and Popadopolous, pp. 134 – 135

# What cannot be patented?

The following are not patentable

- ▶ Laws of nature
- ▶ Physical phenomena
- ▶ Abstract ideas
- ▶ Literary, dramatic, musical and artistic works (these can be protected by copyright)
- ▶ Inventions which are
  - ◆ not useful (e.g. perpetual motion machines)
  - ◆ offensive to public morality

<http://www.uspto.gov/inventors/patents.jsp>

# Requirement of Novelty

The “newness” or novelty and non-obviousness of a patent is lost if the idea is revealed to the public before it is disclosed in a patent application.

“In order for an invention to be patentable it must be new as defined in the patent law, which provides that **an invention cannot be patented if:**

- (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
- (2) **the claimed invention was described in a patent issued** [by the U.S.] or in an application for patent published or deemed published [by the U.S.], **in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.** ”

[http://www.uspto.gov/patents/resources/general\\_info\\_concerning\\_patents.jsp#heading-5](http://www.uspto.gov/patents/resources/general_info_concerning_patents.jsp#heading-5)

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- (2) **the claimed invention was described in a patent issued** [by the U.S.] or in an application for patent published or deemed published [by the U.S.], **in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.** ”

(1) Prior disclosure or sale means the invention is no longer novel or non-obvious

(2) First to file gets to claim the invention

[sources/general\\_info\\_concerning\\_patents.jsp#heading-5](http://www.uspto.gov/patents/resources/general_info_concerning_patents.jsp#heading-5)

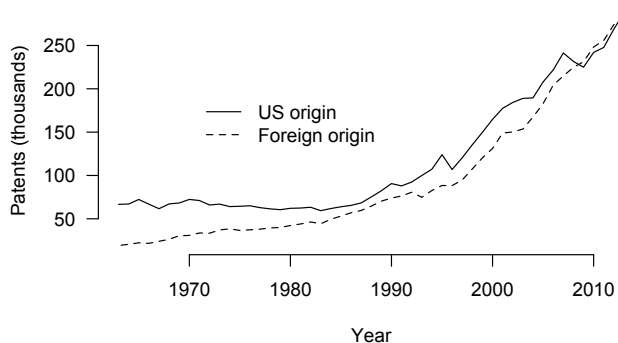
# Patent Facts

- Patents protect inventions – things or processes that are both new and useful.
- Patents give legal holder the right to exclude others from making, using, selling, or offering.
- Patents are valid for 20 years.

# Patent statistics

The number of utility patent applications have grown continuously

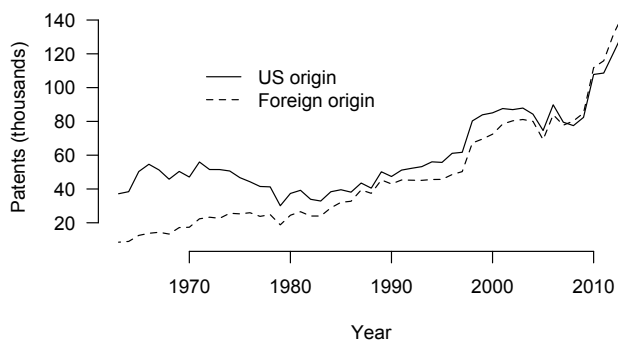
**Utility Patent Applications**



[http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us\\_stat.htm](http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm)  
Accessed 11 October 2014

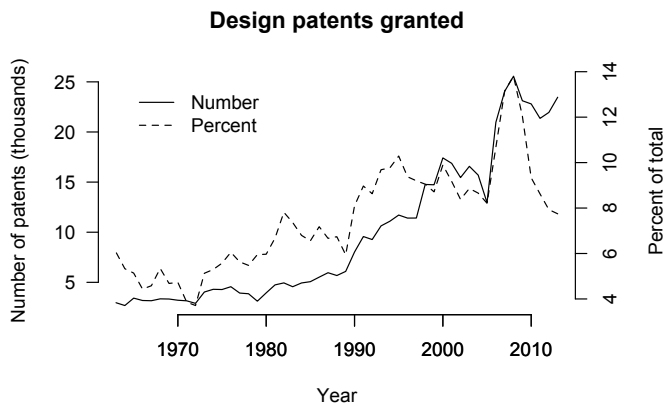
The number of utility patents granted has also increased, and recently surged

**Utility Patents Granted**



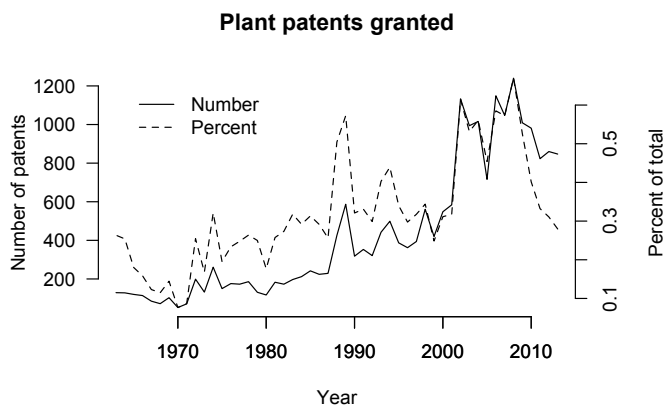
[http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us\\_stat.htm](http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm)  
Accessed 11 October 2014

The number of design patents is a small fraction of the number of utility patents



[http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us\\_stat.htm](http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm)  
 Accessed 11 October 2014

The number of plant patents is an even smaller fraction of the number of utility patents



[http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us\\_stat.htm](http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm)  
 Accessed 11 October 2014

### Top 3 and representative patents counts granted to organizations in 2013

|       |                          |      |
|-------|--------------------------|------|
| 1     | IBM                      | 6788 |
| 2     | Samsung Electronics*     | 4652 |
| 3     | Canon Kabushiki Kaisha   | 3820 |
| <hr/> |                          |      |
| 5     | Microsoft                | 2659 |
| 10    | Google                   | 1851 |
| 12    | Apple, Inc.              | 1775 |
| 43    | Boeing                   | 788  |
| 80    | University of California | 397  |

\*Other divisions of Samsung are counted separately

Source: All Technologies (Utility Patents) Report, Part B,  
[http://www.uspto.gov/web/offices/ac/ido/oeip/taf/topo\\_13.htm](http://www.uspto.gov/web/offices/ac/ido/oeip/taf/topo_13.htm)

# Top 3 and representative patents counts granted to organizations in 2013

|       |                          |      |                                      |
|-------|--------------------------|------|--------------------------------------|
| 1     | IBM                      | 6788 | ← 26.1 per work day,<br>3.3 per hour |
| 2     | Samsung Electronics*     | 4652 |                                      |
| 3     | Canon Kabushiki Kaisha   | 3820 |                                      |
| <hr/> |                          |      |                                      |
| 5     | Microsoft                | 2659 |                                      |
| 10    | Google                   | 1851 |                                      |
| 12    | Apple, Inc.              | 1775 |                                      |
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Source: All Technologies (Utility Patents) Report, Part B,  
[http://www.uspto.gov/web/offices/ac/ido/oeip/taf/topo\\_13.htm](http://www.uspto.gov/web/offices/ac/ido/oeip/taf/topo_13.htm)

Weislogel, Thomas  
 and Graf  
 US # 7,905,946  
 March 15, 2011

4300796294631

(12) **United States Patent** (10) **Patent No.:** **US 7,905,946 B1**  
 Weislogel et al. (45) **Date of Patent:** **Mar. 15, 2011**

(54) **SYSTEMS AND METHODS FOR SEPARATING A MULTIPHASE FLUID** 3,902,177 A \* 11/1976 Wellworth ..... 55288  
 4,450,100 A \* 2/1984 Cudo ..... 55344  
 5,084,825 A \* 6/1991 McKeag ..... 210799  
 5,284,821 A \* 9/1993 Johnson ..... 2417121  
 5,738,324 A \* 1/1995 Poon ..... 210118  
 6,082,127 A \* 6/2000 Cook et al. .... 55283  
 6,364,948 B1 4/2002 Proctor et al. .... 210181  
 6,505,292 B2 \* 9/2004 Johnson ..... 55283

(75) Invention: Mark M. Weislogel, Tigard, OR (US);  
 Tom A. Thomas, Boulder, CO (US);  
 John C. Graf, Seabrook, TX (US)

(73) Assignee: The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, DC (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 324 days.

(21) Appl. No.: 12/190,304  
 (22) Filed: Aug. 12, 2008

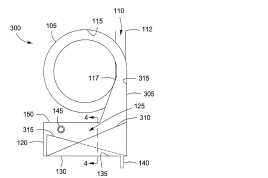
(51) Int. Cl. (2006.01) FOREIGN PATENT DOCUMENTS  
 B21D 45/00 (2006.01) JP 0637482 A \* 7/1985  
 U.S. CL. 95/272; 55/447; 55/461; 55/465; 55/520; 55/428; 55/430; 55/DIG. 14; 95/271; 95/261; 95/268; 95/269; 95/216

(56) Field of Classification Search 95/260; 216; 95/272; 271; 301; 55/447; 55/461; 465; 529; 459; 429; 429; DIG. 14  
 See application file for complete search history.

(50) References Cited  
 U.S. PATENT DOCUMENTS  
 2,103,400 A \* 3/1940 Layne ..... 95289  
 2,213,026 A \* 7/1945 Day ..... 60356  
 2,606,206 A \* 8/1953 Day ..... 65438  
 3,097,724 A \* 2/1964 Day ..... 65311  
 3,575,714 A \* 2/1970 Maloney ..... 62131  
 3,589,313 A \* 6/1971 Smith et al. .... 110222  
 3,972,068 A \* 8/1976 Mastey ..... 200133

(57) **ABSTRACT**  
 Apparatus and methods for separating a fluid are provided. The apparatus can include a separator and a collector having an internal volume defined at least in part by one or more surfaces narrowing toward a bottom portion of the volume. The separator can include an exit port extending toward the bottom portion of the volume. The internal volume can receive fluid expelled from the separator into a flow path as the collector and the flow path can include at least two directional transitions within the collector.

28 Claims, 4 Drawing Sheets



Isaiah-John Booth  
 US # 2012022538A1  
 Sept 6, 2012

4300796294631

(19) **United States** (10) **Patent Application Publication** (10) **Pub. No.:** **US 2012/022538 A1**  
 Booth (45) **Pub. Date:** **Sept. 6, 2012**

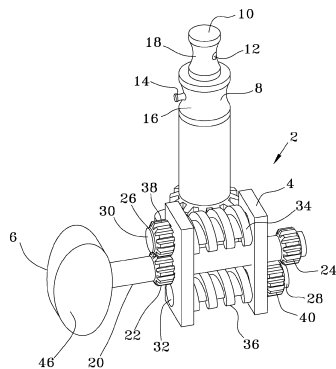
(54) **MULTIPLE STRING TUNING PEG ASSEMBLY** (52) **U.S. CL.** ..... 84394

(70) Invention: Isaiah-John Malama Booth, Portland, OR (US)

(21) Appl. No.: 13/039,250  
 (22) Filed: Mar. 2, 2011

**Publication Classification**  
 (51) Int. Cl. (2006.01)  
 G10D 5/14

(57) **ABSTRACT**  
 A multiple-string tuning peg for a stringed musical instrument capable of independently tuning at least two strings. It minimizes the amount of clutter at the top end of a stringed instrument and maintains the ease of the mechanical gearing assemblies by sharing mechanical components. A single thumb screw can be physically manipulated to operated the multiple string winding mechanisms.



# Copyright

ME 370: Intellectual Property Notes

Copyright is ownership of the *expression of an idea*. It does not extend to the idea itself or the factual information contained in the expression.

Copyright is the right to reproduce, distribute (and sell), display, and perform the expression.

## Copyright vs. Patent

### A Utility Patent

- ▶ gives you the right to prevent someone else from using your invention
- ▶ expires in 20 years

# Copyright vs. Patent

## A Utility Patent

- ▶ gives you the **right to prevent** someone else from using your invention
- ▶ expires in 20 years

## A copyright

- ▶ gives you the **right to perform or sell** the creative work
- ▶ expires in 70 years after the death of the author, or 120 after creation of the work. Can be renewed
- ▶ does not prevent someone else from creating a different expression of the same idea

## Registration

When you write something, it is *automatically copyrighted*.

You can declare your copyright and use the © sign without registering your document.

<http://www.copyright.gov/>  
<http://www.copyright.gov/document.html>  
<http://www.copyright.gov/fls/sl4d.pdf>

## Registration

When you write something, it is *automatically copyrighted*.

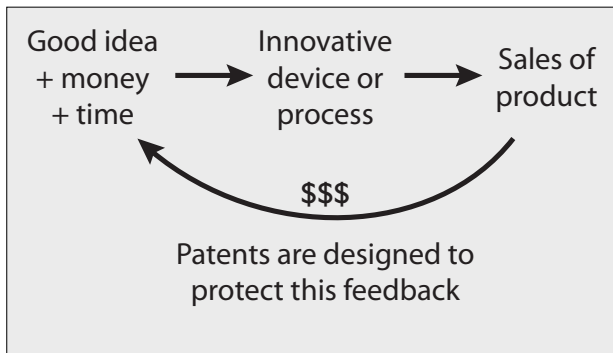
You can declare your copyright and use the © sign without registering your document.

To *register* a copyrighted work, submit a copy of the work to the Library of Congress. Pay \$105 for an electronic filing.

<http://www.copyright.gov/>  
<http://www.copyright.gov/document.html>  
<http://www.copyright.gov/fls/sl4d.pdf>

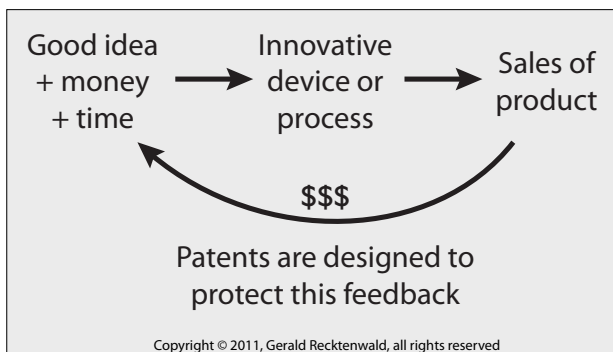
# Example

From an earlier slide in this presentation:



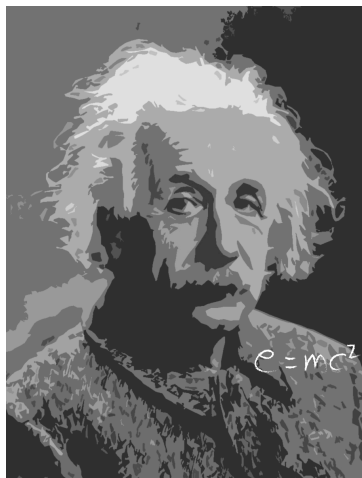
# Example

From an earlier slide in this presentation:



# Example

1. Download public domain image from Library of Congress
2. Apply Photoshop "cutout" filter
3. Use Adobe Illustrator to add  $e = mc^2$  with chalk brush font
4. Save as JPEG file
5. Copyright as art
6. Make posters for sale
7. Profit!?





## Patents

## Copyrights

|                       |  |   |
|-----------------------|--|---|
| Duration              | 20 years from date of filing           | Life of author + 70 years; or 120 years from creation, and may be renewed |
| Scope                 | Implementation of an idea              | Expression of an idea   |
| Registration          | Filing costs \$400. Legal fees » \$400 | Automatic, but © is recommended   |
| Independent invention | Not an exemption                       | Can be used for related expression  |

[http://www.uspto.gov/patents/resources/general\\_info\\_concerning\\_patents.jsp](http://www.uspto.gov/patents/resources/general_info_concerning_patents.jsp)  
<http://copyright.gov/help/faq/>

## Fair Use

The copyright owner has exclusive rights subject to “fair use” limitations.

The following are considered “fair use”

- Criticism
- Comment
- News reporting
- Teaching
- Scholarship
- Research

See: <http://www.copyright.gov/fls/fl102.html>

## Fair Use

Boundaries on fair use are defined by case law.

“The distinction between fair use and infringement may be unclear and not easily defined. There is no specific number of words, lines, or notes that may safely be taken without permission. *Acknowledging the source of the copyrighted material does not substitute for obtaining permission.*”

(emphasis added)

See: <http://www.copyright.gov/fls/fl102.html>

# Public Domain

A work is in the public domain if it does not have a claim of copyright.

Examples:

- ▶ Francis Scott Key's poem, *The Star Spangled Banner*
- ▶ The words in the poems, sonnets, and plays of William Shakespeare

# Creative Commons

An alternative to Copyright

- ▶ Attempt to balance ownership with reuse
- ▶ Owners designate the degree of restriction
- ▶ Six types of licenses
- ▶ See <http://creativecommons.org/>

# Creative Commons

Attribution



Most liberal: maximize sharing  
Claim authorship  
Allow remix and reuse

Attribution-noDerivs



Claim authorship  
Allow redistribution but no changes  
No remix

Attribution-ShareAlike



Claim authorship  
Others may remix and reuse  
Allow commercial use of remix  
New work inherits the license!

Attribution-NonCommercial-NoDerivs



Most restrictive  
Claim authorship  
Allow use and sharing with credit given  
No remix or commercial use

# Trademarks and Trade Secrets

ME 370: Intellectual Property Notes

## What is a trademark

According to uspto.gov:

"A trademark is a brand name. A trademark or service mark includes [any word, name, symbol, device, or any combination, used or intended to be used to identify and distinguish the goods/services of one seller or provider from those of others, and to indicate the source of the goods/services](#). Although federal registration of a mark is not mandatory, it has several advantages, including notice to the public of the registrant's claim of ownership of the mark, legal presumption of ownership nationwide, and exclusive right to use the mark on or in connection with the goods/services listed in the registration."

<http://www.uspto.gov/trademarks/>

## Trademark Indicators



Registered Trademark

TM

Unregistered Trademark

SM

Unregistered Servicemark

# Trademark Examples



iPhone®



**IBM**



## Nike Swoosh

Created in 1971 by Carolyn Davidson, a graphic design student at PSU.

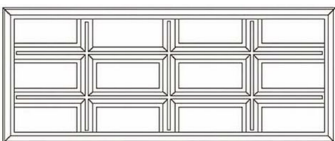
She was paid \$35, but later, in 1983 was given a diamond swoosh ring and an envelope filled with Nike stock certificates.

Source: <http://en.wikipedia.org/wiki/Swoosh>  
[http://www.nikebiz.com/company\\_overview/history/1970s.html](http://www.nikebiz.com/company_overview/history/1970s.html)

## Trademark on Hershey Bar Design

In June 2012, the USPTO's Trademark Trial and Appeal Board (TTAB) rule that the Hershey Chocolate and Confectionary Company had a trademark on the appearance of the Hershey Bar

<http://ttabvue.uspto.gov/ttabvue/ttabvue-77809223-EXA-15.pdf>

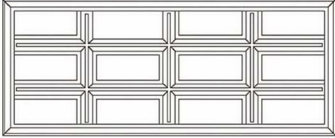


<http://blogs.smithsonianmag.com/design/2012/10/copyright-confection-the-distinctive-topography-of-the-hershey-bar/>

# TTAB ruling on Hershey Bar Design

The description of the mark reads as follows: "The mark is a configuration of a candy bar that consists of twelve (12) equally-sized recessed rectangular panels arranged in a four panel by three panel format with each panel having its own raised border within a large rectangle."

<http://ttabvue.uspto.gov/ttabvue/ttabvue-77809223-EXA-15.pdf>



<http://blogs.smithsonianmag.com/design/2012/10/copyright-confection-the-distinctive-topography-of-the-hershey-bar/>

## Trade Secrets

ME 370: Intellectual Property Notes

### You can try to protect your IP by keeping it secret

Example: Recipe for Coca Cola

#### Benefits:

- ▶ No disclosure of the idea, as in a patent
- ▶ Protection can be indefinite, i.e. longer than 20 years of a patent lifetime

#### Costs

- ▶ Maintain vigilance to prevent disclosure
- ▶ Can allege theft only after secret has been stolen

## Requirements for a Trade Secret are codified in the US legal code

To claim IP as a Trade Secret

- ▶ The owner has to demonstrably take measures to keep it secret
- ▶ The secret information provides economical benefits.

<http://www.law.cornell.edu/uscode/text/18/1839>

## In 2006, three Coca Cola employees tried to sell the secret recipe to PepsiCo

PepsiCo turned in the thieves.

The screenshot shows the top portion of a New York Times article. The masthead includes 'The New York Times' and 'Business'. Below the masthead is a navigation bar with categories: WORLD, U.S., N.Y. / REGION, BUSINESS, TECHNOLOGY, SCIENCE, HEALTH, SPORTS, and C. A secondary navigation bar includes: MEDIA & ADVERTISING, WORLD BUSINESS, YOUR MONEY, DEALBOOK, MARKETS, and COMPANY. The article title is 'Agents Arrest 3 in Plot to Sell Coca-Cola Secrets to PepsiCo'. The author is listed as 'By BRENDA GOODMAN' and the publication date as 'Published: July 6, 2006'. The main text begins with 'ATLANTA, July 5 — Federal agents have arrested and charged an employee of the Coca-Cola Company and two others with stealing trade secrets and wire fraud, saying they tried to sell "highly classified" information to that company's competitor PepsiCo for \$1.5 million.' To the right of the text are links for 'E-MAIL', 'PRINT', 'REPRINT', and 'SAVE'. At the bottom right is a small red box with the text 'B I R' and 'NOW PLAYIN'.

## Four Types of IP

1. Patents
2. Copyrights
3. Trademarks
4. Trade secrets