Intellectual Property

Leza Besemann, Technology Strategy Manager
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ME 4054
Agenda

• Types of IP
• Patents
  a. Types
  b. Requirements
  c. Anatomy
  d. New US patent law
• About Office for Technology Commercialization
  a. Process for students
# Intellectual Property (IP)

- Intellectual property refers to creations of the mind
  - Rights given to intangible assets

<table>
<thead>
<tr>
<th>Asset</th>
<th>Rights</th>
</tr>
</thead>
<tbody>
<tr>
<td>inventions</td>
<td>Patents, Trade Secrets</td>
</tr>
<tr>
<td>literary, artistic works, <strong>software</strong> and drawings</td>
<td>Copyrights</td>
</tr>
<tr>
<td>symbols, names, images and designs used in commerce</td>
<td>Trademarks</td>
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</tbody>
</table>
Honeycrisp Apple

A University of Minnesota Innovation

Is the Honeycrisp IP?
How is the Honeycrisp Protected?

- Patent
- Copyright
- Trademark
- Trade secret
Copyright

• Set of rights in an original work of authorship
  a. Fixed in a tangible medium of expression

• Protects expression and not idea

• No special action required to obtain copyright

• Protects against unauthorized copying
  a. Does not protect against independent development
Trademark

• Word, name, symbol or device

• Used in commerce to identify the source of goods (or services)
  a. Words
  b. Colors (e.g. pink for Owens Corning building insulation)
  c. Shape of product (e.g. the Coke bottle)
  d. Sounds / smells
  e. Animated characters
Trade Secret

• Confidential information
  a. Protects ideas, methods, and other information

• Elements:
  a. Derives economic value or provide a competitive advantage
  b. Not generally known to others
  c. Steps are taken to maintain secrecy

• Examples
  a. Formula for Coca-Cola
  b. Manufacturing processes
Trade Secret Protection

**PROS**
- Duration can be infinite
- No federal registration required

**CONS**
- Duration can be finite
- Reverse engineering
- If a 3rd party (independently) gets a patent on your trade secret, you can be prevented from using your trade secret
Is your **Design Notebook** IP?

How is it protected?

COPYRIGHT
Patent

- **Property** rights granted by the government to an inventor
  
  a. Requires full disclosure of invention

- The right to **exclude** others from making, using, offering for sale, selling or importing the invention
Types of Patents

- **Plant patents** – protects any new and distinct variety of plant that has been invented or discovered and asexually reproduced
  a. Term: 20 years from the date the application is filed

- **Design patents** – protects ornamental appearance of an article
  a. Term: 14 years from the grant date

- **Utility patents** – protects new and useful process, machine, manufacture, or composition of matter, or any improvement
  a. Term: 20 years from the date the application is filed

- **Provisional patent application** – low cost approach to securing an early filing date. Never examined. Must file a regular patent application within 1 year.
  a. Term: 1 year
Design Patent Example

United States Design Patent
Andre et al.

Patent No.: US D622,261 S
Date of Patent: Aug. 24, 2010

Inventors:
- Bartley K. Andre, Menlo Park, CA (US)
- Daniel J. Coster, San Francisco, CA (US)
- Daniele De Iuliis, San Francisco, CA (US)
- Richard P. Howarth, San Francisco, CA (US)
- Jonathan P. Ive, San Francisco, CA (US)
- Steve Jobs, Palo Alto, CA (US)
- Duncan Robert Kerr, San Francisco, CA (US)
- Matthew Dean Rohrbach, San Francisco, CA (US)
- Douglas B. Satzger, Menlo Park, CA (US)
- Calvin Q. Seidel, Palo Alto, CA (US)
- Vincent Kehoe Seidel, legal representative, Los Gatos, CA (US)
- Christopher J. Stringer, Woodside, CA (US)
- Eugene Antony Whang, San Francisco, CA (US)

Assignee: Apple Inc., Cupertino, CA (US)

Term: 14 Years
Appl. No.: 29/535,204
Filed: Jan. 5, 2010

Field of Classification Search
D14/400, 435, 474, 483, 717, 137, 138, 160, D14/168, 356, 203.1–203.8, 507, 345/156, 345/169, 173–179, 905, 715/727–729, 864; 710/1, 5, 8; 713/1, 600; 455/1.1, 1.7, 73, 455/344–347, 93, 95, 301–309, 550.1, 573.1; 370/342–344; 369/1, 2, 6–12; 463/43–47; 273/148 B

See application file for complete search history.

References Cited
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D264,969 S 6/1982 McGourty (Continued)

OTHER PUBLICATIONS

Primary Examiner—Prabhakar Deshmukh

Attorney, Agent, or Firm—Storne, Kessler, Goldstein & Fox PLLC

CLAIM
We claim the ornamental design for a media player, as shown and described.

DESCRIPTION
This application is also related to U.S. Design patent application Ser. No. 29/153,109, filed on Oct. 22, 2001, now U.S. Design Pat. No. D469,109. All of which are herein incorporated by reference.

FIG. 1 is a front perspective view of a media player showing our new design.

FIG. 2 is a front elevational view thereof.

FIG. 3 is a left side view thereof.

FIG. 4 is a right side view thereof.

FIG. 5 is a bottom view thereof.

FIG. 6 is a top view thereof.

FIG. 7 is a rear elevational view thereof.

The broken lines show portions of the media player which form no part of the claimed design.

1 Claim, 5 Drawing Sheets
Utility Patent

• 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 (35 U.S.C. § 101)
Utility Patent

• Elements for patentability
  a. Useful (utility)
  b. New (novel)
  c. Non-obvious
Utility

- Must have some real-world use
- Must not be harmful to society
- Must not violate laws of physics and nature

Ideas found to violate the utility requirement:
  a. Perpetual motion machine
  b. Method of controlling the aging process
  c. Illegal or highly dangerous products
Novelty

• Was not previously known, sold or used by others anywhere in the world

• Determined by searching literature, patent databases, web, etc.
Non-Obviousness

• Higher hurdle than the novelty and utility requirements

• Invention could not be readily deduced from publicly available information
  a. Combination or modification of one or more references that make the claimed invention obvious

• A “surprising and unexpected” result
Is it Patentable?

• If you change a rivet to a screw in a device?

Probably not patentable
Anatomy of a Patent

• Front Page
  b. Title
  c. Inventors
  d. Filing Date
  e. Abstract

• Drawings
• Background
• Description of Drawings
• Detailed Description
• Claims
REAL-TIME MONITORING OF PARTICLES IN SEMICONDUCTOR VACUUM ENVIRONMENT

Inventors: David Y. Pui, Plymouth, MN (US); Yi Liu, Minneapolis, MN (US); Christof Asbach, Oberhausen (DE); Heinz Fissan, Kerken-Aledekerk (DE)

Assignee: Regents of the University of Minnesota, St. Paul, MN (US)

Notice: Subject to any disclaimer; the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 426 days.

Appl. No.: 11/773,197
Filed: Jul. 3, 2007

Prior Publication Data
US 2009/0206820 A1 Aug. 20, 2009

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2005/0225368 A1 10/2005 Orsuk ................ 324/71.4

Primary Examiner—Jarrett J Stark
Attorney, Agent, or Firm—Westman, Champlin & Kelly, P.A.

ABSTRACT
An apparatus includes semiconductor processing equipment. A particle detecting integrated circuit is positioned in a vacuum environment, the particle detecting integrated circuit having a pair of conductive lines exposed to the vacuum environment. The pair of conductive lines is spaced at a critical pitch corresponding to diameters of particles of interest. A computer system is linked to the particle detecting integrated circuit to detect a change in an electrical property of the conductive lines when a particle becomes lodged between or on the lines.

20 Claims, 2 Drawing Sheets
Drawings

**FIG. 3**

**FIG. 4**

100

EXPOSE IC IN MASK STAGE TO GASES

102

APPLY VOLTAGE TO PAIR OF CONDUCTIVE LINES OF IC

104

DETECT CHANGE IN ELECTRICAL PROPERTIES OF LINES

106
Written Description

• **Background** states what is currently known in the art

• **Detailed Description** must enable “one of skill in the art” to practice (e.g., make, use, etc.) the invention

• **Description of Drawings**
Claims

• Scope of the invention is determined by the breadth of the claims

• Include a list of elements or steps

• Written as a single sentence

• Patent infringement determined by determining if product has all elements in claims

What is claimed is:
1. An apparatus comprising:
a vacuum chamber containing a particle detecting integrated circuit, the particle detecting integrated circuit including a plurality of devices, each of the plurality of devices including a pair of conductive lines that are configured to define a channel to capture at least one particle having an associated diameter, the pair of conductive lines of each of the plurality of devices includes a uniform pitch representing a single particle size between pairs of the conductive lines of the plurality of devices;
wherein the pairs of the conductive lines of the plurality of devices are further configured to enable a change in capacitance of one of the pairs of conductive lines of the plurality of devices when a non-metallic particle is lodged on or between the one of the pairs of the conductive lines of the plurality of devices.
Types of Claims

• Independent claim
  1.) A device comprising:
      element A;
      element B;
      element C; and
      element D.

• Dependent claim
  2.) The device of claim 1, further comprising element E.
5. An apparatus comprising:
a mask stage in a vacuum chamber of semiconductor processing equipment;
a particle detecting integrated circuit embedded in the mask stage, the particle detecting integrated circuit comprising a plurality of devices, each of the plurality of devices having a pair of conductive lines exposed to a local vacuum environment, the pair of conductive lines are configured to define a channel to capture at least one particle having an associated diameter, the pair of conductive lines of each of the plurality of devices having a uniform pitch representing a single particle size;
wherein the pairs of conductive lines of the plurality of devices are further configured to enable a change in capacitance of one of the pairs of conductive lines of the plurality of devices when a non-metallic particle is lodged on or between the one of the pairs of the conductive lines of the plurality of devices.

6. The apparatus of claim 5 wherein the pair of conductive lines of each of the plurality of devices is configured to receive an applied voltage.

7. The apparatus of claim 5 further comprising a computer system linked to the particle detecting integrated circuit.
Patenting Deadlines

Make Idea Publicly Known
“Public Disclosure”
(Day zero)

Discovery

Foreign Rights

Make Idea Publicly Known
“Public Disclosure”
(Day zero)

1 Year

No Patent Rights

US Rights

Grace Period*

No Patent Rights

US Patent Law Change Coming Soon

• Leahy-Smith America Invents Act (AIA)
  a. Signed into law on September 16, 2011
  b. Most significant change to the U.S. patent system since 1952
• March 16, 2013 – Become a "First-Inventor-to-File (FITF)" system
  a. Effectively, 1-year grace period under old laws has been eliminated
    • Grace period may exist in some situations but still exact implementation (rules) unclear.
    • Best to assume there is no 1-year grace period
Patent Costs

• Patent protection is expensive
  a. $3-10,000+ (U.S. application)
  b. $25-30,000+ (U.S. lifetime cost)
  c. $Millions for global rights
Patent Searching

• Google Patents (google.com/patents)
  a. Does not include all patents
  b. Google does not update frequently

• US Patent Office (uspto.gov)
  a. Not very user friendly but issued patents and published patent applications can be searched

• European Patent Office (ep.espacenet.com)
  a. Provides US and foreign patents
Office for Technology Commercialization

• **Mission**: commercialize innovations developed at the U when it is useful for society and will provide a reasonable return on investment

  a. Identification of innovations
  b. Thorough market assessments
  c. Protection (patent, copyright, trademark)
  d. Licensing
  e. Start new companies
U Commercialized Inventions

Honeycrisp Apple

Flight Data Recorder (Black Box)

Autoscope

Gentle Leader
Tech Commercialization Simplified

Develop

Faculty, students and staff develop new IP

Protect

File patent application or copyright asset

License

License IP to existing company or start new company

Product

Company develops and sells product

Income

Company pays U royalty
OTC Generates Revenue for U

Results for FY2012

- Inventions Disclosed: 321
- Patents Filed: 115
- New Licenses: 71
- New Startups: 12
- $45.7 million gross revenues

- Research
- Innovation
- Equipment
- Scholarships
- Income distribution
- Commercialization

University of Minnesota
Driven to Discover

Office for Technology Commercialization
IP Policy

The University is sole owner of all IP...

• created by University employees in the course of their employment;

• created by students or post-doctoral or other fellows in the course of their academic duties or appointments; or

• created by individuals, including employees, students, or post-doctoral or other fellows, using substantial University resources.
Reporting New IP to OTC

- If IP is **protectable** and has commercial potential...

- Complete the IP disclosure form to initiate the OTC evaluation

- Download form from OTC website

www.research.umn.edu/techcomm/
Senior Design Courses

• Report IP to OTC only if...

  a. Outside person (e.g. advisor from a company) is a likely inventor
  b. If a professor or other University employee is a likely inventor
  c. It is related to existing University owned IP (e.g. an improvement to an existing invention)
  d. If you believe the invention has significant commercial value and is likely patentable
Technology Selection

• Technologies are evaluated based upon:
  
  a. Commercial potential
     • Solves a known problem (unmet need)
     • Market size
     • Market growth rate
  
  b. Ability to protect the IP (usually by patent)

Technologies must be protectable, and have a reasonable commercial potential with expected returns on investment
Questions?

Leza Besemann
Technology Strategy Manager
Office for Technology Commercialization

612.625.8615
besem007@umn.edu
www.research.umn.edu/techcomm/