Inventions, patents, and licensing: The process at Caltech

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Topics

• About my office (OTTCP)

• What is a patent?

• How do I get a patent?

• Prior art and publication bars

• Inventorship, ownership, and licensing
OTTCP can help you with IP matters

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Please talk to us for specific advice!
(tell us whose lab you’re in)
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What is a patent?

“The Person of Ordinary Skill in the Art” (POSITA)
CLAIMS

1. An imaging device including a monolithic semiconductor integrated circuit substrate, said imaging device comprising a focal plane array of pixel cells, each one of said cells comprising:

   a photogate overlying said substrate for accumulating photo-generated charge in an underlying portion of said substrate;

   a readout circuit comprising at least one output transistor formed in said substrate;

   a charge coupled device section formed on said substrate adjacent said photogate having a sensing node connected to said output transistor and at least one charge coupled device stage for transferring charge from said underlying portion of said substrate to said sensing node; and

   wherein said readout circuit is a complementary metal oxide semiconductor (CMOS) circuit formed on said substrate, said substrate being of a first conductivity type, said CMOS circuit comprising plural metal oxide field effect transistors of a first conductivity type, a well region of a second conductivity type in said substrate and plural metal oxide semiconductor transistors of a second conductivity type formed in said well region.
With an issued patent...

Patentee can **exclude** (for a certain period of time*) others (in the US) from:

- Making
- Using
- Selling, or offering to sell, or
- Importing into the US

the patented (claimed) invention.

*Patent infringement = doing this without a license

*20 years from first non-provisional priority date
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Scientists invent in research labs

Invention disclosures to OTTCP

Provisional patent application filing

Conversion? (US)

Conversion? (PCT)

National phase entry?
Disclosure should include:

- Thorough description of invention – often a manuscript in preparation; include a one-page summary
- Names, contact information, citizenship, signatures of inventors
- ALL funding sources
- Past disclosures/publications of the subject matter
Provisional patent application:
- “Coversheet” filed by OTTCP
- Inexpensive
- Quick (same day if received by noon, next business day otherwise)
- Remains confidential, if not converted
- Does not need to have claims
Conversion to non-provisional application:

- Outside attorneys engaged for non-provisional filing
- Expensive (~$10k US, + ~$5k PCT)
- Several weeks’ prep time (attorneys working with inventors)
- Published 18 months from priority date (typically, provisional filing date)
- Must have claims
- US and/or PCT?
The examination process at the USPTO

Application submitted to USPTO

“Notice of Missing Parts”
(fees, inventor oaths and declarations)

---publication of application typically somewhere in here, 18 months from priority date, always on a Thursday---

Restriction Requirement
(sometimes)

Non-final Office action
“on the merits”

“Final” Office action
“on the merits”

Formalities

Patentability
Patentability criteria

“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.”

Patentable subject matter (35 USC § 101)

Novelty (35 USC § 102)

Non-obviousness (35 USC § 103)

Written description, enablement (35 USC § 112)

over the “prior art”
You’re almost there...

Notice of allowance!

• Pay issue fee, and patent issues (always on a Tuesday)

BUT you’re not done yet...

• Maintenance fees due after issuance at:
  • 3.5 years
  • 7.5 years
  • 11.5 years
    (in US; typically annually, elsewhere)

• Patent challenges (PGR, IPR)
How long does it all take?

Invention disclosure

1. **US provisional patent app. filed**

2. **Provisional expires**

   - **12 months**

   - "Conversion"
     - **Non-provisional US patent app.**
     - **PCT ("international") app.**

3. **Priority date**

   - **30 months**

   - **PCT expires**

   - ~18 months

   - Office action

   - Response

   - Allowance!

4. **Continuation or divisional application**

   - Continuation-in-part (CIP) application

   - Related new invention disclosure

   - ~18 months

   - National phase entry?

5. **Issued foreign patent(s)**

   - Time (not to scale)

   - Publication 18 months from priority date
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Prior art timeline

- Dec 8, 2017: A, B (Prior art (if by someone else))
- Dec 8, 2018: A, B
- Dec 8, 2019: A, A', B, B', C

Prior art (if by someone else, with respect to C, possibly A' and B')

No disclosure by anyone after non-prov filing is prior art
What could be a barring disclosure?

Yours, or someone else’s…

- Prior publication?
- Earlier patent application?
- Talk or presentation?
- Thesis? Thesis defense?
- Grant proposal?
- Just telling someone else your idea?

It all depends!
When should I disclose/file?

Conception

Timing of filing

Reduction to practice

Less prior art

Better data

Ideally: shortly BEFORE publication or other barring disclosure
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Who is an inventor?

Inventor = One who conceived the *claimed* invention

- Not one who merely reduces the invention to practice
- Legal determination made by outside lawyers if necessary

\[
\text{INVENTORSHIP} \neq \text{AUTHORSHIP}
\]

*Note: Inventor order DOES NOT matter!*
Who owns an invention/patent?

• Inventor starts by owning her/his inventions

• However, under employee Patent Agreements, agree to assign inventions to employer

• Employer (Caltech) then owns the patent

• Royalties shared with inventors (25%, after cost recovery and 3rd party obligations)
**Government**
- Bayh-Dole Act (federal)
- Reporting/compliance obligations
- Government rights

**Foundations**
- May include IP provisions, such as royalty-sharing or licensing requirements

**Industry**
- Research sponsors from industry typically have first right to IP developed through their funding (patenting decisions, option to license, internal-use NERF)

Sponsor rights
Collaborations

Inventors assign to UC Regents

Caltech and UCLA work out an IIA*

Inventor assigns to Caltech

Jointly-owned patent
(UC and Caltech)

* IIA = Inter-Institutional Agreement
What does Caltech do with its patents?

OTTCP mission:

...to drive the transfer of scientific and engineering knowledge created by our researchers to maximize societal impact by developing partnerships with industry through the creation of new ventures, collaborations with corporations, and transfer of intellectual property while nurturing an entrepreneurial environment.

How?

Licensing IP (patents) to startups or established companies, who develop and sell products/services
Licensing – key terms

START-UP

Running royalties, annual minimums

Diligence requirements

12 month option, low fee

Full license upon exercise

Modest/no upfronts, patent cost deferment

Caltech takes equity

Running royalties, annual minimums

Diligence requirements

Typically go straight to a license

Upfront license fee, immediate patent cost reimbursement

No equity
Caltech’s Record of Innovation since 1995

5,526 invention disclosures

2,688 US patents issued

682 license agreements granted to companies

36 license agreements generating > $1M

2 generating > $100M

Expensive lottery tickets...

Invention disclosures

US patents issued

License agreements granted

Revenues over $1M

Revenues over $100M

*Invention pre-dates 1995

(From OTTCP 2016 Impact Report)
Thank you for your time and attention!

Any questions?