Biofuel Inventions/Innovations and Intellectual Property Law

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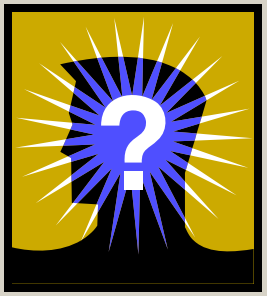
What Is Intellectual Property?

- Patents
  - **Utility patents** (provisional and non-provisional)*
  - Design patents (ornamental/aesthetic design of article)
  - Plant patents (asexually reproduced plant)
- Trademarks
- Trade dress
- Copyrights
- Internet/web rights
- **Trade secrets***
- Shop rights
- P.V.P. Certificate (Plant Variety Protection Act, for novel variety of seed-bearing sexually reproduced plants)



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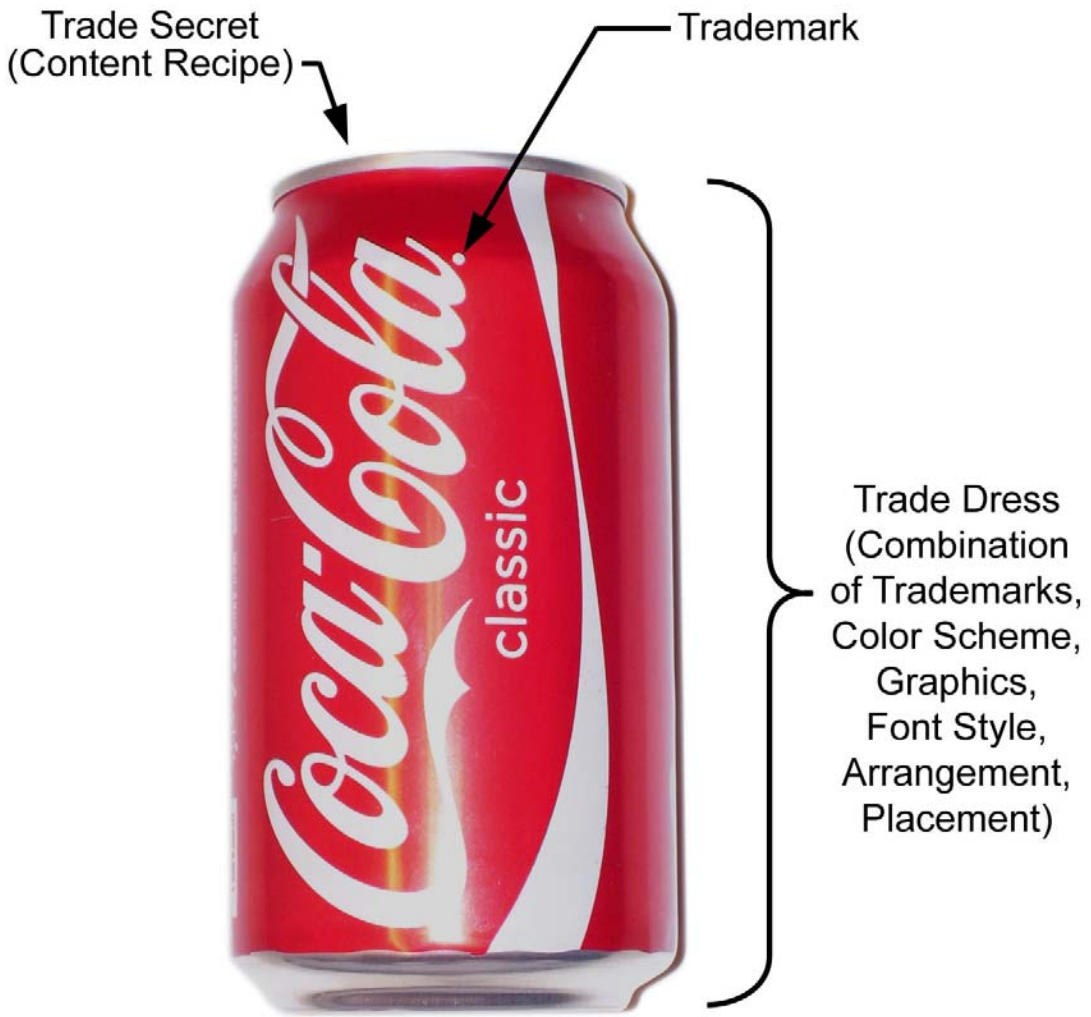
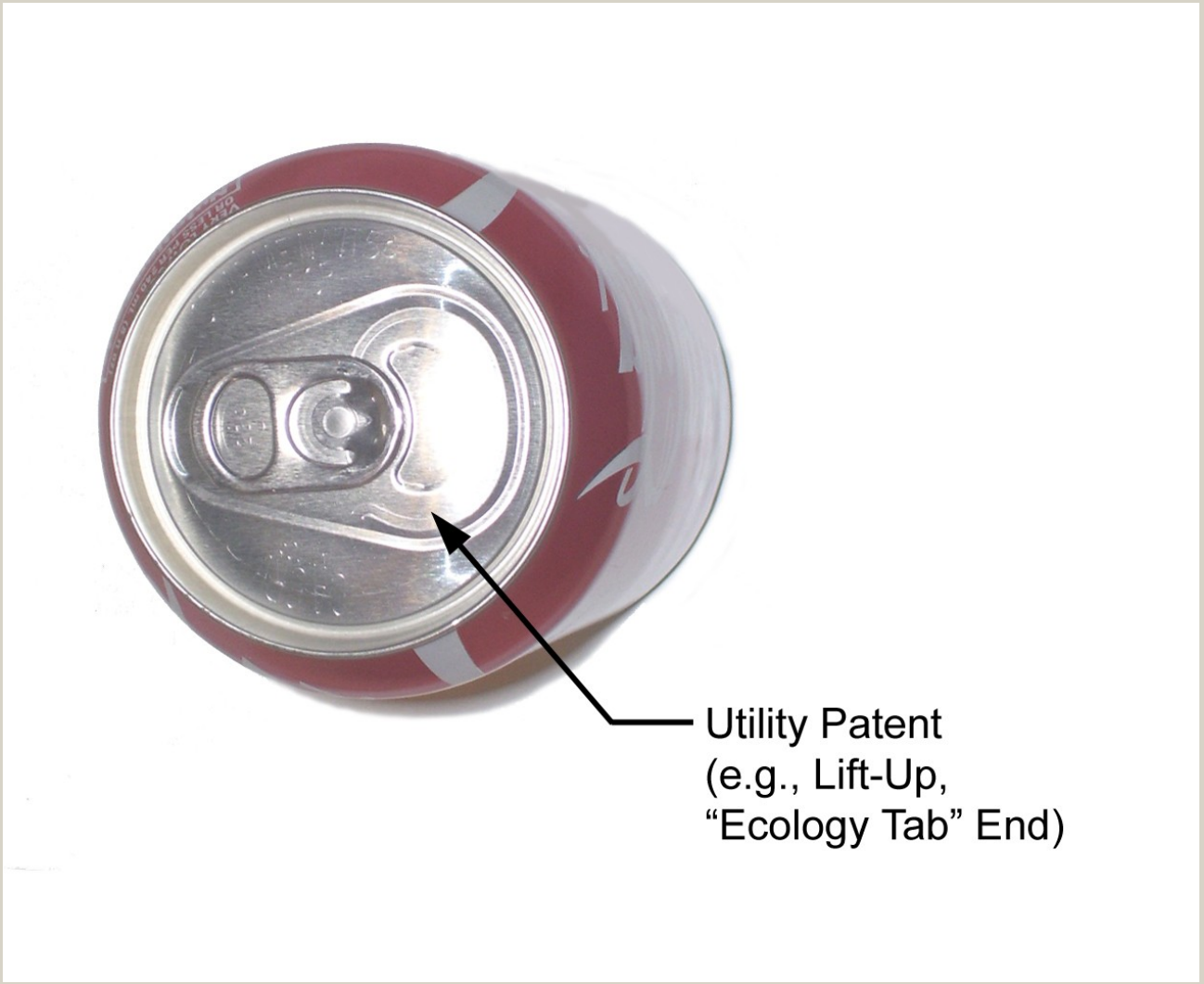


Coca-Cola® is a registered trademark of The Coca-Cola Company



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Utility Patents (U.S.)

- Gives right to exclude others from making, using, selling, offering for sale and importing the claimed subject matter
- Term: 20 years from filing – formerly 17 years from issue
- Requirements – the "Big Four":
  - Novelty (new; not disclosed in its entirety in the prior art)
  - Useful (specific, substantial and credible)
  - Not obvious (to one of ordinary skill in the art)
  - Disclosure (description, enablement, best mode)

Utility Patents - Cont.

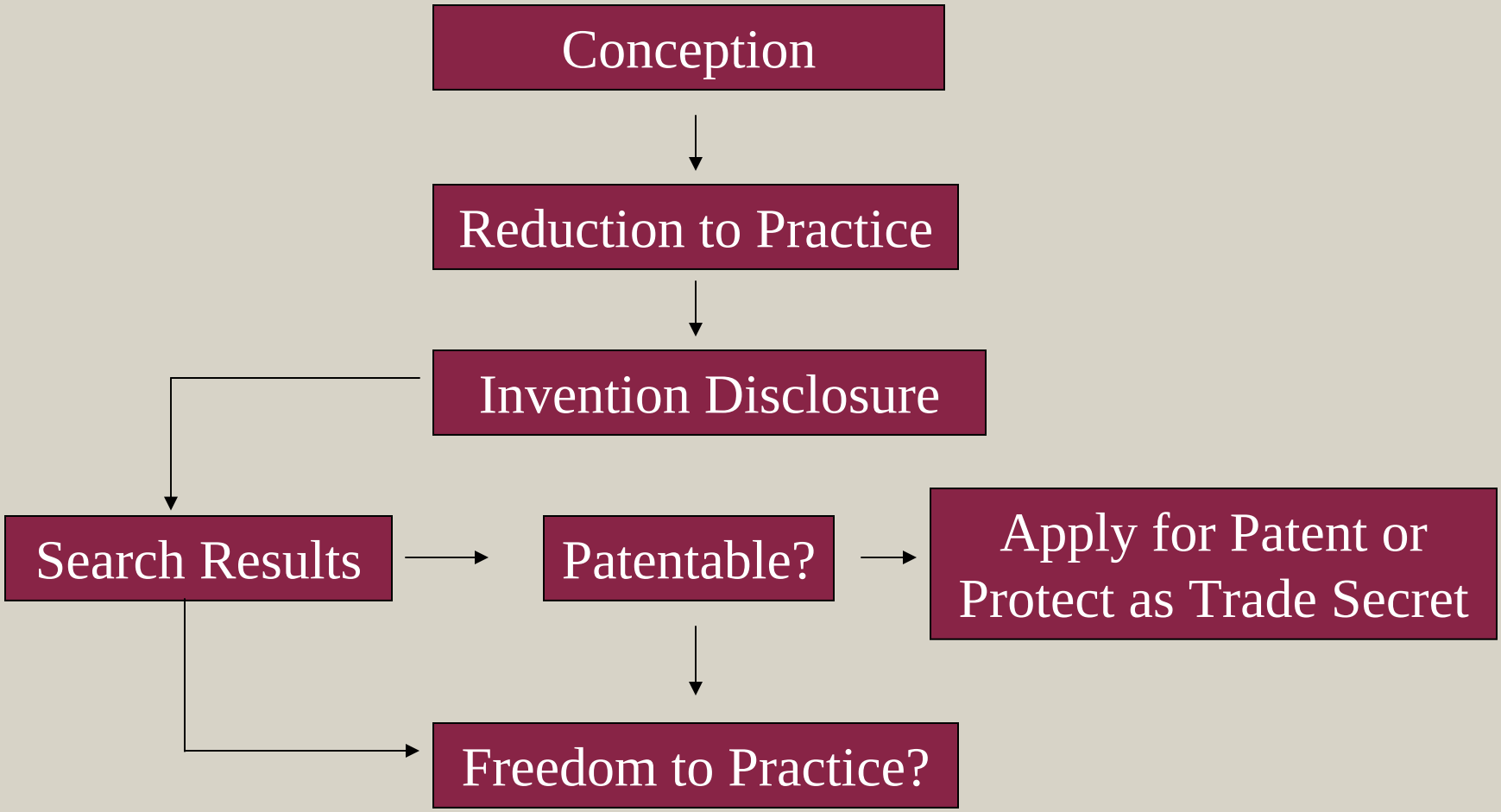
- Test for infringement: whether the accused device, or method, includes each and every element, or its substantial equivalent, as contained in the claim (each claim is separately infringed; only need to infringe one claim)

- Tip: Good practice to conduct a full "due diligence" investigation of current patents (and best to include published applications – and then follow pertinent ones as needed) to help assure that your company will not infringe some third party's patents

Utility Patents - Cont.

- Common misconception - Don't fall for the common misconception: Recall, a patent gives the "right to exclude others," but NOT the right for you to use and practice the claimed subject matter
- Geographic scope: Limited to U.S. and territories (i.e., need foreign patents for protection in other countries/markets)

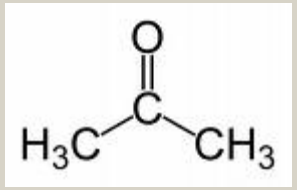
Invention and Patent Assessment Flow Chart



Patentable Subject Matter

(35 U.S. C. § 101)

- "Anything under the sun that is made by man"
- Statutory classes for utility patents:
  - Process (production methods/software processes/e-commerce)
  - Machines (conventional machinery/equipment/software/systems/ kits
  - Manufactured products (nonmoving parts/consumer products)
  - Compositions of matter (chemicals/catalysts/alloys/life forms/ pharmaceuticals)
- Includes:
  - New uses of any of the above
  - Improvements on any of the above



- See "Additional Reading" section for patentable vs. non-patentable examples

When is an Invention Ready for Patenting?

- Don't need to make it
- Don't need to test it
- Don't need a proven commercially viable use (any usefulness will do)
- Ready when you can describe the invention in terms that a skilled person can make/practice invention without undue experimentation
- Benefits to early filing include:
  - Ability to keep further refinements as trade secret (or the subject of follow-on patent applications)
  - Easier to prevent others from patenting (earlier publication)
  - Easier to win a priority dispute (presumptions)

Novelty
(35 U.S.C. §102)

- What is novelty?
  - Invention not described in its entirety in a single "prior art" reference
  - See "Additional Reading" page regarding examples of "prior art"

How Early Must You Patent?

"Statutory Bars" to filing patent application

- In United States:
  - Any of a first disclosure/offer or sale/public use/"enabling" printed publication of invention starts a one-year timer
  - Must file application within one year from that first publication, disclosure, public use, offer or sale (the U.S. "grace period")
- In Foreign countries:
  - No grace period (unlike U.S.), as a general rule
  - Disclosure, use, or sale before application voids patentability (in most countries)

How Early Must You Patent - Cont.

- Tip: Be mindful! There are two (or even three) separate filing deadlines to remember here, i.e., U.S. regular application (or PCT application, and foreign applications (depending on which foreign patent convention followed)

- Tip: If wish foreign protection, must file U.S. case before first commercial use / disclosures

"Nonobviousness"

(35 U.S.C. §103)

- Even if invention is novel, it may not be patentable if it would have been obvious to a person of ordinary skill in the art
- The person of ordinary skill in the art is presumed to know all the relevant art and public information at the time of the invention; think of workshop with all relevant art hanging on the wall
- Considerations that may prove your invention is not obvious
  - Satisfies a long-felt need in industry
  - Immediate industry recognition/acceptance
  - Commercial success of invention, i.e., that can be tied to novel aspects
  - Produces "unexpected results"

"Nonobviousness" - Cont.

- "Nonobviousness" is the battleground for most patent applications (in the USPTO and in court)

- Tip: Carefully explain to patent counsel all advantages and reasons why your invention is an improvement over the known prior art

- Tip: Be prepared to demonstrate that your invention provides unexpected results over the prior art

Types of U.S. Utility Patent Applications

- **"Provisional"** Patent Application
  - Procedural option to secure filing date; lower initial cost; but same disclosure requirements (except claims)
  - Low filing fees – initially economical; can often add more costs overall
  - Not examined or enforceable
  - Not disclosed to public (until regular application published)
  - Reserves rights for one year; then expires automatically; need to file regular "non-provisional" application to maintain rights
  - Gives time to consider if invention worth pursuing, while retaining rights/priority

Types of U.S. Utility Patent Applications - Cont.

- **"Non-Provisional"** (so-called regular) patent application
  - Disclosure requirements (written description, claims, drawings, enabling disclosure, best mode – so can't maintain content as trade secret, if later published/issued)
  - Often, cheaper overall to just directly file a full utility application (non-provisional)
  - Enforceable patent results (if allowed and issued)
  - Publicly available (published) 18 months from earliest U.S. priority date (unless commit never to foreign file)

- Tip: Even if diligently search for it, may not find a competitor's "published" application, as they may have committed not to foreign file

Patent Ownership

- Ownership, by statute, in the U.S.: Each co-inventor owns the right to practice (at least as regards to the other co-owners) all the claims of a patent containing at least one claim conceived by the inventor, and can do so independently of the other co-inventor

- Thus, each co-owner of a patent, unless altered by agreement, and unlike co-owners of real property, has right to freely commercialize invention without any duty to account to other co-owner(s)

Some Challenges In Seeking Biofuel Patents

- An inventor, with a pending patent application related to "energy," can file a "Petition to Make Special," i.e., have USPTO expedite prosecution of that application in that given class/sub-class, seeking to obtain patent at earliest date possible. However, such petition requires extra work and diligence, i.e., extra cost to applicant

Challenges In Seeking Biofuel Patents - Cont.

- Academia-generated biofuel innovations: Broaden researchers' thinking to consider all different potential commercial applications for their one invention, if have data to support, i.e., can create greater licensing possibilities

- Often, joint inventors from different entities involved in a given innovation being patented, hence, need joint commercialization agreements

- If can include carbon trading/emissions credit aspects to a biofuels patent application, and gets allowed, have broader patent with increased chances of attracting investments, licensees, and better/wider coverage regarding possible infringements

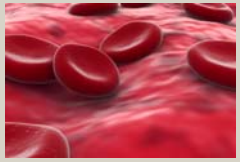
Challenges In Seeking Biofuel Patents - Cont.

- Seeing very few biofuel-related IP lawsuits to date, as industry still relatively young and few highly-commercial patents yet issued, but lawsuits will no doubt come (see sample lawsuits in "Additional Reading" section)

- Recent U.S. Supreme Court's *KSR* decision (especially regarding more mechanical-type innovations) now requires non-obviousness showings of more than simply "ordinary innovation, yielding predictable results," "obvious matter of design choice," and using "more than common sense," to achieve the innovation

Challenges In Seeking Biofuel Patents - Cont.

- Pursue (always present) need to draft patent application's claims to be as broad as prior art will allow, i.e., to keep competitors as far away as possible
- Tip: Like often done with large process patents, consider dividing up multiple component biofuel process systems into several smaller areas, i.e., trying to get multiple patents. More costly approach, but helps create a more difficult patent position for a competitor to overcome, if several allowed



- Many biofuel (and other renewable energy and "cleantech") innovations cross over between multiple technical subjects, i.e., are interdisciplinary in nature, so inventors (and patent counsel) need to come from numerous different technical specialties

Trade Secret

- A Trade Secret is (definition varies slightly by state):
  - Information, including a formula, pattern, compilation, program, device, method, technique, or process, that:
    - Derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use; and
    - Is the subject of efforts that are reasonable under the circumstances to maintain its secrecy

Trade Secret Examples

- Technical information, including
  - Manufacturing processes
  - Material specifications/product measurements/design tolerances/operating ranges
  - Chemical compositions/formulas/blending specifications
  - Drawings, blueprints, CAD files, schematics, plans and designs
  - Compounds and process sheets
  - Computer software
- Negative information (via R&D, identification of ideas that didn't work or don't work as well; caution: not recognized by all courts)
- Positive information (ideas that work better)

Trade Secret Examples - Cont.

- Compilations of business information, including:
  - Note: The more specialized the business information, and harder to create, the more likely it will be protected, versus more readily ascertainable information
  - Vendor lists, e.g., sellers of hard-to-find catalysts
  - Customer lists/preferences
  - Pricing
  - Strategic planning (5-year plans, plant acquisitions, new product lines)
  - Marketing information
  - Financial information, e.g., gross profits by plant site
- Tip: Ideally, the best trade secret is something difficult to reverse-engineer

Common IP Pitfalls

- Biofuels companies new to/not conversant with IP issues -
  - Biofuel companies need to create all the "barriers-to-entry" for their competitors they can, yet some won't seek patents
  - Moving ahead without first protecting your own/investigating third parties' IP rights
  - Not seeking IP protection before seeking funding, as many potential investors and business partners desire/require
  - Not watching others' patents, and not commercializing innovations that other patentees left unprotected
  - Not recognizing that many basic biofuel technologies are old (e.g., subject of expired patents), and also that new biofuel innovations are often small (incremental) improvements to existing technology, but which still may be patentable

Common IP Pitfalls - Cont.

- Biofuels companies new to/not conversant in IP issues cont. –
  - Not appreciating that many biofuels innovators are much more concerned/enthused with the technology, and much less so with business/legal/IP aspects
  - Trying to protect via trade secret (instead of patent) in situations where:
    - Sophisticated competitors can reverse engineer the biofuel process/composition "secret"
    - Must rely heavily on third parties (for process equipment or raw materials), and your "secret" may inevitably "leak" out, despite good protections/intentions
    - Mandatory EPA/DNR disclosure requirements (regarding fuels/production processes) that will likely divulge "secret"
  - Not seeking patents for "secondary" aspects, i.e., also patent your resultant novel bio-byproducts/processes as secondary to your main innovation

Common IP Pitfalls - Cont.

- Internally-created innovations
  - Lack of proper use of "lab notebooks" and "invention disclosure" forms to record new innovations
  - "Loose" procedures for confidential information
  - Lack of appreciation for statutory bars to patent filing, i.e., can lose rights. E.g., distributing a prototype (or making a non-confidential disclosure) even at no charge, could void the patent if done to commercialize your invention
  - Misconception that owning a patent is a right to use, or is some type of defense to infringement of another's prior broader patent (again, patents provide only a right to exclude others, not a right to use!)

Common IP Pitfalls - Cont.

- Internally-created innovations cont.
  - Slow to consider need for "freedom-to-operate" searching/ "clearance" analysis/"design around" advice regarding third party rights
  - Not monitoring competitor's activities / IP
  - Not setting up/maintaining "reasonable" trade secret protection measures
  - Not recognizing the possible patentability of seemingly "simpler" (but important "last step to make it work") innovations.
  - Not considering foreign protection (license revenue stream)
  - Believing that internet searching will uncover all relevant prior art, without doing further searching

IP-Related Licensing/Contracts

- Address company vs. employee issues regarding IP ownership, disclosure of inventions, cooperation to secure, defend, and enforce IP rights, and ongoing obligations
- "Out-licensing" of your own IP rights, to allow use by a third party in the same or different field, market, location
- Helps generate additional revenue stream
- Helps preserve and evidence valuable company confidential information
- Allows securing for your operation rights to important processes, systems, business opportunities, etc. from third parties

- See "Additional Reading" section regarding numerous different types/descriptions of IP licenses/contracts

“Free” Patent Websites

- www.pat2pdf.org
- www.patentfetcher.com/Patent-Fetcher-Form.php
- www.freepatentsonline.com
- www.google.com/patents
- www.patentmonkey.com/PM/
- http://patft.uspto.gov/
- http://ep.espacenet.com/ - world-wide patents

Thank you! Questions?

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***Illinois attorney attendees: Please contact our Marketing Director, Judith Truman at jtruman@marshallip.com, regarding potential CLE credits.**

Sample Patent


US007288685B2

(12) **United States Patent**
Marker

(10) **Patent No.: US 7,288,685 B2**
(45) **Date of Patent: Oct. 30, 2007**

(54) **PRODUCTION OF OLEFINS FROM BIORENEWABLE FEEDSTOCKS**

(75) Inventor: **Terry L. Marker**, Palos Heights, IL (US)

(73) Assignee: **UOP LLC**, Des Plaines, IL (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **11/432,012**

(22) Filed: **May 11, 2006**

(65) **Prior Publication Data**

US 2007/0015947 A1 Jan. 18, 2007

Related U.S. Application Data

(60) Provisional application No. 60/682,722, filed on May 19, 2005.

(51) **Int. Cl.**
C10G 1/00 (2006.01)
C10G 51/04 (2006.01)

(52) **U.S. Cl.** **585/240**; 585/241; 585/242; 208/67; 208/87; 208/90; 208/113; 208/179

(58) **Field of Classification Search** 585/240–242, 585/651, 653; 208/67, 87, 90, 113, 179
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,702,886	A	11/1972	Argauer et al.	423/328
5,504,259	A *	4/1996	Diebold et al.	568/697
6,538,169	B1	3/2003	Pittman et al.	585/653

* cited by examiner

Primary Examiner—Glenn Caldarola
Assistant Examiner—In Suk Bullock
(74) *Attorney, Agent, or Firm*—Frank S. Molinaro

(57) **ABSTRACT**

A process for producing olefins from biorenewable feedstocks has been developed. The process comprises first pretreating the feedstock, e.g. vegetable oil, to remove contaminants such as alkali metals and then cracking the purified feedstock in a fluidized catalytic cracking (FCC) zone operated at conditions to provide C_2-C_5 olefins.

4 Claims, No Drawings

Sample Patent Application Publication

US 20060207166A1

(19) **United States**

(12) **Patent Application Publication**
Herskowitz et al.

(10) **Pub. No.: US 2006/0207166 A1**

(43) **Pub. Date: Sep. 21, 2006**

(54) **PRODUCTION OF DIESEL FUEL FROM VEGETABLE AND ANIMAL OILS**

(75) Inventors: **Mordechay Herskowitz**, Meitar (IL); **Miron Landau**, Beer-Sheva (IL); **Iehudit Reizner**, Lehavim (IL); **Mark Kaliya**, Beer-Sheva (IL)

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(21) Appl. No.: **11/378,322**

(22) Filed: **Mar. 20, 2006**

Related U.S. Application Data

(60) Provisional application No. 60/663,203, filed on Mar. 21, 2005.

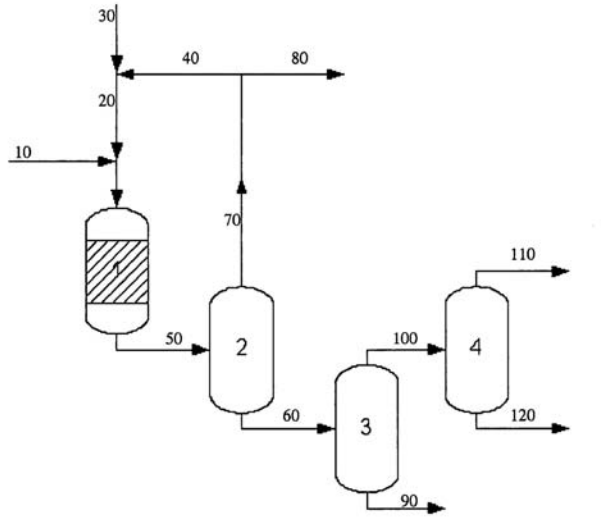
Publication Classification

(51) **Int. Cl.**
C10L 1/18 (2006.01)

(52) **U.S. Cl.** **44/385**; 208/133

(57) **ABSTRACT**

A process for producing a fuel composition from vegetable and/or animal oil comprises hydrodeoxygenating and hydroisomerizing the oil in a single step. The fuel composition has acceptable lubricity and comprises a mixture of C_{15} to C_{18} paraffins having a ratio of iso to normal paraffins of 2 to 8 and less than 5 ppm sulfur.



Sample PCT Patent Application Publication

Ep. 0032939

PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 3: F27B 15/00	A1	(11) International Publication Number: WO 81/00296 (43) International Publication Date: 5 February 1981 (05.02.81)

(21) International Application Number: PCT/US80/00844
(22) International Filing Date: 7 July 1980 (07.07.80)
(31) Priority Application Number: 056,513
(32) Priority Date: 11 July 1979 (11.07.79)
(33) Priority Country: US

(71) Applicant: DEPEW, Thomas, N. [US/US]; 10 Sunningdale, St. Louis County, MO 63124 (US).

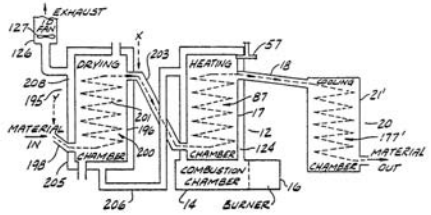
(71) Applicants; and
(72) Inventors: REED, Elmer, E. [US/US]; Star Route 287, Potosi, MO 63664 (US). REED, Roger, D. [US/US]; Route 2, Box 241 A, Potosi, Mo 63664 (US).

(74) Agent: GILSTER, Peter, S., et al.; Kalish & Gilster, 818 Olive Street, Suite 1614, St. Louis, MO 63101 (US).

(81) Designated States: AT, AU, BR, CH, DE, DE (Auxiliary utility model), DK, FR (European patent), GB, JP, NL, NO, SE, SU.

Published
With international search report
With amended claims and statement

(54) Title: APPARATUS AND METHOD FOR PROCESSING ORGANIC MATERIALS



(57) Abstract

A method for processing various organic materials such as lignocellulosics or biomass into more useful states, such as charcoal, carbon black, and coke, and other processed products while producing useful off-gases, includes feeding aggregate pieces of the material to a vertically extending heating chamber (17) and, preferably, closing the chamber (17) to air to control oxygen therein. The pieces are conveyed upwardly through the chamber (17) in a predetermined time by spiral vibratory conveyor (87). The chamber (17) is heated to a preselected temperature sufficient for gaseous conversion of volatile hydrocarbon constituents of the material. Resultant off-gases are removed from the chamber (17) for further use such as burning thereof for heating the chamber or condensing volatiles etc. Apparatus for carrying out the method includes preferably first (17) and second (21) such chambers, there being continuous spiral vibrator tray (90) in each chamber carried by a central, vertical support column (26) (27). Vibration generators (26) (27) secured to the support column (26) (27) impart vibratory forces to the tray for conveying the material by vibratory action. Heating of the material is carried out in the first chamber (17) preferably by burning off-gases generated therein. After heating, material is transferred to the second chamber (21), also closed to air, for cooling as pieces are carried by vibration along a spiral conveyor (177) therein. If drying of material is desired to reduce moisture content prior to carbonization the material may first be conveyed through another chamber (196) heated with combustion gases from heating of the first chamber (17) by vibratory action.

Sample Patent Application Publication

US 20030044951A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2003/0044951 A1**

Sporleder et al. (43) **Pub. Date: Mar. 6, 2003**

(54) **BIO-REACTION PROCESS AND PRODUCT**

(76) Inventors: **Robert A. Sporleder**, Berthoud, CO (US); **James C. Linden**, Loveland, CO (US); **Herbert A. Schroeder**, Fort Collins, CO (US); **Donald Johnson**, Fort Collins, CO (US); **Linda L. Henk**, LaPorte, CO (US); **Robert P. Tengerdy**, Fort Collins, CO (US); **George Szakacs**, Budapest (HU)

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BOULDER, CO 80303 (US)

(21) Appl. No.: **10/234,966**

(22) Filed: **Sep. 3, 2002**

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/357,337, filed on Jul. 14, 1999, now Pat. No. 6,444,437.

(60) Provisional application No. 60/092,747, filed on Jul. 14, 1998.

Publication Classification

(51) **Int. Cl.**[7] **C12N 9/20**; C12N 9/30; C12N 9/42; C12N 9/48; A23L 1/48

(52) **U.S. Cl.** **435/198**; 435/203; 435/209; 435/212; 426/18

(57) **ABSTRACT**

Rural biomass and other cellulosic materials are converted to a protein-enriched animal feed supplement or to single-cell protein by a series of bio-reactions. A first stage bio-reaction is a solid substrate bio-reaction. Enzymes, such as cellulase, produced by the first-stage bio-reaction are added to a second-stage bio-reaction. Raw second-stage bio-reaction feedstock is pretreated to hydrolyze hemicellulose and/or to partially digest starch in the feedstock. In the second-stage bio-reaction, the feedstock is substantially digested and single-cell protein is harvested in an aerobic bio-reaction, while ethanol is produced in an anaerobic reaction. Alternatively, raw biomass or other cellulosic materials can be treated with organic acid (e.g. maleic acid) combined with dry steam to produce a nutritional product that can be directly used as an animal feed supplement.

Representative Samples of Biofuels IP-Related Litigation/Controversies

- A). *Horizon Ethanol LLC, et al. vs. Hanson, et al.* (N. Dist. Iowa; filed 2007) – Allegations of trade secret misappropriation, breach of covenants not to compete, and breach of confidentiality obligations, brought against plaintiffs former ethanol plant operations manager and former maintenance technician regarding confidential plant operations technology

- B) *Idaho Energy, LP, d/b/a Energy Products of Idaho vs. Harris Contracting Company, et al.* (Dist. Idaho, filed 2007) – A declaratory judgment action where plaintiff sought relief relative to defendant's patent, and alleged misuse thereof, concerning fluidized bed energy systems, for use at ethanol plants (see U.S. Pat. No. 7,263,934). Claims for relief ranged from declaration of patent invalidity, business defamation, interference with prospective economic advantage, trade libel, unfair competition, Lanham Act (false designation) violations, and conspiracy

Representative Samples of Biofuels IP-Related Litigation/Controversies - Cont.

- C). *Agri-Process Innovation, Inc., et al. vs. Greenline Industries, LLC* (E. Dist. Arkansas, filed 2008) – Concerns a controversy arising from a vendor agreement (between engineering company, installation company and designer of feedstock conversion process units) where, among other claims and cross charges, there was alleged misappropriation of trade secrets, and copyright in plant designs, i.e., regarding overall designs and equipment for biodiesel plants

- *Quantum Catalysts, LLC vs. Ze-Gen, Inc., et al.* (Dist. Mass., filed 2008) – Concerns lawsuit on patent, trade secrets, and unfair competition claims about low cost, high efficiency, and/or shorter lead time, environmentally – friendly gasification processes, i.e., for a molten metal bath-type gasifier, to process hydrocarbons and biomass for producing synthetic gas (see, e.g., U.S. Pat. Nos. 5,191,154 and 5,301,620 of some fourteen patents-in-suit)

Samples of Patentable vs. Non-Patentable Subject Matter

Utility (35 U.S.C. §101)

- Patentable - Any idea or discovery that was not previously known (and, is not obvious) is potentially patentable:
  - A combination of known ingredients (e.g., chemicals, enzymes) in different ratios
  - Substituting a new/different ingredient for a known ingredient
  - Changing the order of a process
  - Adding/eliminating a step in a known process
  - Pretreatment processes
  - Non-naturally occurring oil-eating bacteria
  - Nanoscale metal alloy catalysts for use in gasification process
  - Isolated novel genes and proteins
  - Methods producing a tangible result (business methods on generating carbon offsets or sequestering carbon, if meet other requirements)
  - Engineered "fermentation/pretreatment-enhanced" feedstock

Sample of Patentable/Non-Patentable - Cont.

- Not Patentable
  - Algorithms by themselves/abstract formulas
    - But note, a business method that uses such an algorithm may be patentable, especially with physical transformation or recitation of a meaningful "machine" limitation in the claims
  - Physical phenomena (even when newly discovered)
  - Laws of nature
  - Products as they exist in nature, e.g., natural product per se is not patentable, but a method that uses natural product may be patentable

Prior Art Under §102/Novelty

- The "Prior Art" includes:
  - Existing patents
  - Publications, including descriptions in
    - Articles
    - Web-pages
    - Ph.D. thesis/defense
    - Meeting or presentation with abstracts and/or handouts
    - Posters
  - Meetings with industry without a confidentiality agreement
  - Contract bids that disclose the invention
  - Something known, used, or sold before the invention by the inventor

Life Cycle of a Patent

- Conception
- Reduction to practice/testing
- Prepare/file patent application
  - Note: prior art search not currently required by USPTO; but if do one, results must be disclosed to USPTO
- Prosecution of application
- Consider corresponding foreign protection
- Issuance
- Maintenance (periodic required fee payments)
- Enforcement?
- Licensing/assignment
- Invalidation?
- Disclaimer to public?
- Expiration

Patent Application Process

- File application
- Disclose all relevant prior art
- Review by Examiner (trained/specializing in relevant art; can be 2-3 year wait)
- Response to Examiner's rejections by argument and amendment of claims (up to six months to respond)
- Repeat if necessary
- Appeal if necessary
- The entire patent prosecution process can take a long time (currently, 25 month average pendency to first action, and 32 months to completion; longer with software and business method patents)

Types of IP Licenses & Agreements

- Employment agreements
  - May have invention confidentiality, non-compete, and "anti-contamination" provisions
- Secrecy a/k/a Non-Disclosure (NDA) and Confidential Disclosure (CDA) Agreements
  - Facilitates confidential disclosure of information and materials for limited defined purpose
- Research/service agreements
  - May come from the government/other companies to develop products, or be out-going to non-profits and for-profits, to develop your product, e.g., SBIR/STTR/CRADA
- Joint development/alliance agreements
  - Cooperation to develop and commercialize products

Types of IP Licenses & Agreements - Cont.

- In-license agreement
  - Obtain rights of technology and IP to develop and/or commercialize products/services
- Out-license
  - Grant of rights to technology and/or IP for third party development/commercialization
- Settlements/covenants-not-to sue
  - Usually arise from dispute resolution to address freedom-to-operate regarding IP rights
- Copyright/work for hire/software development agreement
  - Needed to provide rights to party paying for services

Benefits of/Reasons for Patents

- Protects invention and equivalents – direct competitive advantage of "excluding others"
- Prevents "Johnny-come-lately" competitors from taking advantage of your costly R&D
- Blocks competitors from commercializing low-cost, alternate, or less favorable versions of your patented invention
- Prevents others from practicing your production process
- Impacts competitors' research in the field
- Easier to enforce than other IP (presumed valid)
- Creates industry reputation/prestige as leader/innovator
- Promotes internal climate for innovation/entrepreneurship
- Investors look for IP (patent) protection; facilitates research funding; stimulates investment

Patent Benefits/Reasons - Cont.

- Provides bargaining chip in defense of infringement claims (e.g., cross-license); resolves disputes
- Publication creates a visible barrier to market entry ("patent thicket")
- Events like mere filing, and again with later publication, can help prevent others from obtaining patents in the same field
- Provides potential to still keep invention as trade secret, unless patentable
- Can be valued, borrowed against, depreciated, etc.
- Can be sold or licensed (exclusive or non-exclusive) to create revenue stream
    - E.g., Grant controlled license to a big customer's "second supplier"

Patent Benefits/Reasons - Cont.

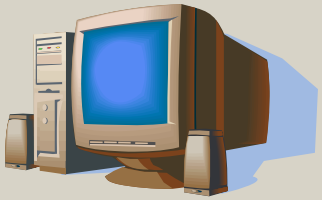
- Threat of "Provisional Rights" – under certain circumstances, rights extend back to claims when the provisional patent application was published (18 months after filing/priority date)
- Types of enforceable rights:
  - Injunction (even preliminary)
  - Block imports, lost profits (remember marking)
  - Royalties
  - Punitive damages (up to 3x & attorneys fees)

Patent Issuance, Maintenance, Expiration, Scope (U.S.)

- Issuance:
  - Once allowed, the issue fee is paid
  - Patent issues ~ 3 months thereafter (always on Tuesday)
  - About 3,500 patents issue each week
- Maintenance fees for utility patents: 3½, 7½, and 11½ year anniversaries of issue date (each increases in cost)
- Expiration:
  - Utility patent ~ 20 years from filing date (term extension may apply)
  - Once issued, U.S. patent is presumed valid, but subject to:
    - Invalidity attacks in litigation
    - Re-examination before the USPTO, via third party

Patent Issuance, Maintenance, Expiration, Scope - Cont.

- The scope of the invention is defined by the claims
  - Claims are like a deed to property – define the "metes and bounds" of the legal monopoly
  - Broad claims have a broad reach, but more prone to invalidity attack
  - Narrow claims have less reach, but more likely to survive invalidity attack



Permissible Competitive Intelligence vs. Trade Secret Misappropriation

- What is competitive intelligence?
  - Monitoring IP/competitive activities of competition
  - Reverse Engineering the Competition's process/product
    - Use of Commonly used tools
    - Reviewing readily apparent information
- What is independent development?
  - Use of a "clean room" approach to recreate the competition's product/process
- What is trade secret misappropriation?
  - Generally any illegal activities, use of improper means, extraordinary measures or unauthorized access to obtain trade secrets and confidential information

Clean Room

Permissible Competitive Intelligence vs. Trade Secret Misappropriation - Cont.

- Trade secret misappropriation cont.
  - Hiring competitor's employees to obtain trade secrets
  - Economic Espionage – use of improper means to gather trade secret or confidential information

    - Burglary
    - Fraud/trickery
    - Wire-tapping
    - Bribery
    - Breach/inducement of breach of duty to maintain secrecy
    - Breach of access controls
    - Using stolen documents
    - Computer hacking

- Tip: Be very careful! Under certain circumstances, possible fine-line between proper competitive intelligence gathering, and use of improper means

Competitive IP Intelligence – Some Proper Examples

- IP Watches – Engage IP lawyer or technical consultant to undertake ongoing watch, to send reports of any "hits" e.g.,
  - Periodic searching of patents/publications/industry periodicals/ new lawsuits under given competitor or inventors' names, or under specific subject matter
  - Ordering periodic checks of new patents in particular Classes/ Sub-Classes of interest listed in U.S. Patent & Trademark Office's on-line Official Gazette
- Once learn of a competitor's patent/published application that potentially covers your process, product, formula, etc., promptly inform company management/legal

Common IP (Patent/Trade Secret) Pitfalls

- Employee IP issues
  - Employee inventions and shop rights – who owns?
  - Does the employee agreement cover inventions, confidential information, and assignment of IP?
  - Is there a risk the employee will divulge a prior employer's confidential information / trade secret to new employer?

    - Tip: Take careful steps to prevent
  - Is there an employee handbook / manual (and does it cover confidentiality and IP issues)?
  - Departing employees

    - Tip: There are special precautions to promptly take – e.g., exit interviews, obtain return of materials having confidential information, letters to departing employee and new employer)
  - Sales reps – "loose lips" problems re: company's newest IP

Common IP Pitfalls - Cont.

- Contractors/vendors/consultants/testing companies/ repair technicians/other third parties:
  - Joint development issues?
  - Special "co-ownership" problem, created by patent statute, for co-inventor situations (e.g., where one "inside" inventor and one "outside" inventor of joint invention)?
  - Confidentiality issues?
  - Payment for inventive services?
  - Prospective joint venture partners?
- Unsolicited "outside inventor" submissions -
  - Tread/treat carefully – potential for fraudulent theft of idea/ unjust enrichment lawsuits
  - Set up/follow strict handling procedures

Common IP Pitfalls - Cont.

- CDA's/NDA's (use them, or suffer possible loss of important IP rights)
- Purchasing issues
  - Standard terms and conditions (do they cover IP rights/UCC issues?)
- Company acquisition
  - IP due diligence investigation/analysis

- Duty of disclosure (during a patent application's prosecution in the USPTO)
  - All material prior art known to inventors, patent attorneys/ agents, and others substantively involved with pending patent application, must be disclosed to USPTO