

Patents 101

How to protect your inventions and discoveries

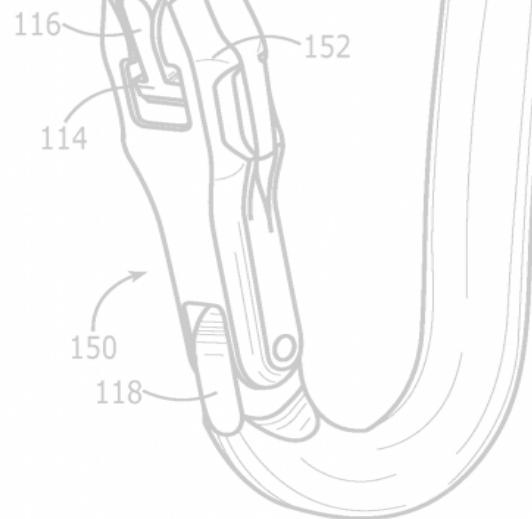


FIG. 1A

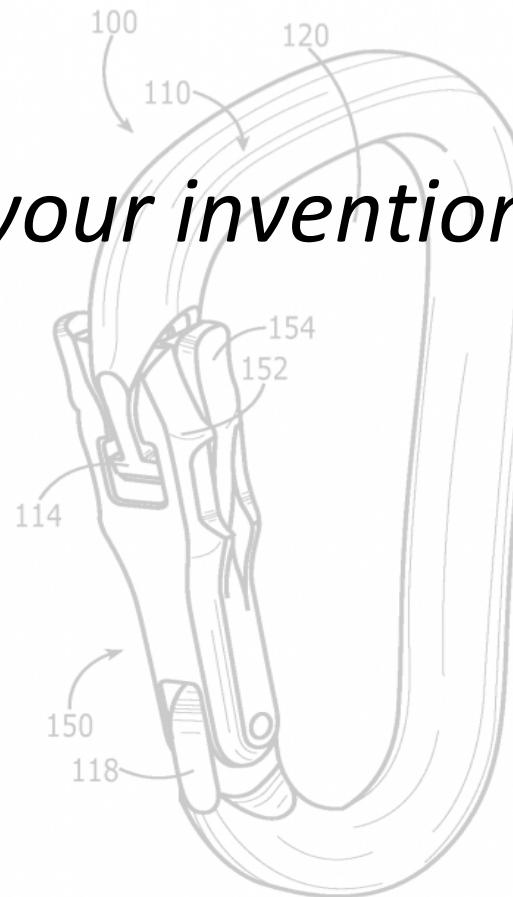


FIG. 1B

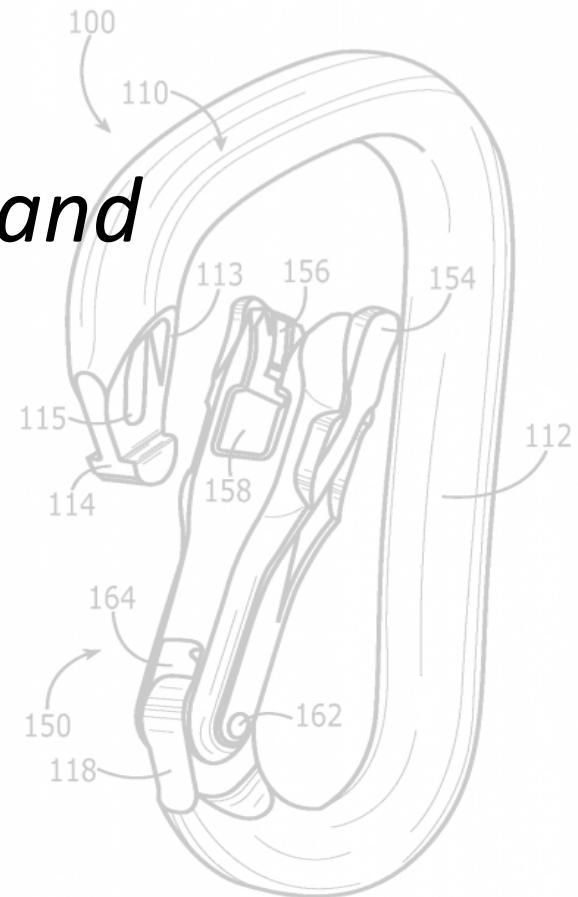


FIG. 1C

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Materials Science & Engineering

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Goals of the Presentation

- Understand why (as engineers) you should know about patents and IP
- Define what intellectual property is (and isn't)
- Identify types of patents
- Describe specific examples
- Categorize parts of a patent document
 - Abstract
 - Description
 - Claims
- Identify the role of prior art in the patenting process
- Become familiar with the mechanics of patenting your work

Why should you know about patents?

- You don't need to have a JD with a focus on patent law...
- BUT being oriented and otherwise generally familiar with patents and claims can help you (!)...
 - Understand when your invention/idea may be worth patenting
 - Work with lawyers to make sure that your technology is both accurately represented and broadly covered by the claims in a prospective patent
 - Understand your rights in the case of potential infringement
 - Understand the value of patents in the “business world” (e.g. future jobs, start-ups, etc.)

Question 1: Why does intellectual property (including patents) exist at all in the US?

[multiple choice...choose the best answer]

- A. To help lawyers pay for their fancy suits.
- B. To help inventors protect their inventions.
- C. To serve as an asset in business transactions.
- D. To protect technology invented in the United States (or other country).
- E. To incentivize the creation of new technology.

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Intellectual Property: Purpose

- Article I of the US Constitution
 - Patents exist “*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.*”
- The ***purpose*** of intellectual property is to:
 - Encourage the development of new ideas...
 - ...by giving the creator, author, or inventor exclusive rights.

Intellectual Property: Classifications

- There are four “types” of intellectual property...
 1. Copyright
 2. Trade secret
 3. Trademark
 4. Patents

1. Copyrights

- Copyright give the originator of a work the exclusive right to make (authorize) the work.
- Exclusive right for one of:
 - 28 years
 - 56 years
 - Life of author + 50 years
 - 75 years from publication date
 - 100 years from date of creation
- Applies to literary, dramatic, musical, artistic works.

FUN FACT: Under European copyright law, a book enters the public domain on the first day of January 70 years after its author's death, with no further permission needed from this date to reprint it.



2. Trade Secrets

- Protects the idea and are not bound to any specific expression of the idea.
- Trade secret *protection is lost* if someone else **independently** discovers the idea **legally**.
- Owner must actively and aggressively protect the secret (physical, contractual restrictions).
- Requirements for trade secret protection violation
 - Information must not widely be known.
 - Violator made unauthorized use of info.

Examples

- Recipe for Coca-Cola
- Some kinds of software
- Custom operation of certain machines and equipment

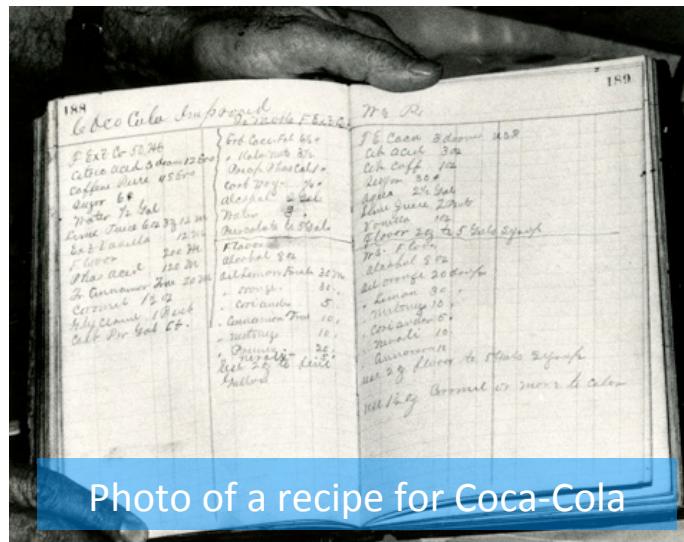


Photo of a recipe for Coca-Cola

After 125 yrs, secret Coke formula is out

MYSTERY MIX

Fluid extract of Coca	3 drams
Citric acid	3oz
Caffeine	1oz
Sugar	30"
Water	2.5gallon
Lime juice	2pints a quart
Vanilla	1oz
Caramel	1.5oz

7X FLAVOUR

(2oz of flavour to 5 gals syrup)	
Alcohol	8 oz
Orange oil	20"
Lemon oil	30"
Nutmeg oil	10"
Coriander	5"
Neroli	10"
Cinnamon	10"

► Mystery was marketing tool, P 26

Since it was first made in 1886, the Coca-Cola formula is one of the most fiercely guarded trade secrets of the corporate world. Many claimed to have found it, but the mystery of Merchandise 7X, the name given to the combination of secret ingredients which gives the soft drink its distinctive taste, has endured. Now an American public radio show claims to have found the recipe kept in an Atlanta steel vault and which, it is said, only two employees at a time know how to mix. The two never fly together. "This American Life", broadcast on more than 500 stations, said it found the recipe in a 40-year-old newspaper. Its website thisamericanlife.org said the Atlanta Journal-Constitution published the photo of a book containing a handwritten replica of the original recipe on February 8, 1979.

3. Trademarks

- Names or symbols that identify a product.
- Trademark protection give the registered owner exclusive use of the *name* or *symbol*.
- Trademark protection depends on the degree of similarity and the likelihood of confusion.
- Incorporating a company does not automatically give the company a trademark on the name.
- Trademarks can't be proper names or words in common usage.



Energizer files a trademark for "battery bunny" in the United States and Canada.

4. Patents...

- 1. Copyright**
- 2. Trade secret**
- 3. Trademark**
- 4. Patents**

Question 2: What is a patent?

[multiple choice...choose the best answer]

- A. Description of a new technology, process, or invention.
- B. Something that students/professors put on their CV to make them seem smart.
- C. Legal contract between an inventor and the United States of America.
- D. Document that legally authorizes someone to practice an invention or technology (in the US).

Question 2: What is a patent?

[multiple choice...choose the best answer]

- A. Description of a new technology, process, or invention.
- B. Something that students/professors put on their CV to make them seem smart.
- C. **Legal contract between an inventor and the United States of America.**
- D. Document that legally authorizes someone to practice an invention or technology (in the US).

4. Patents: A Patent is a *Quid Pro Quo* between an inventor and the United States of America...

- The *inventor* receives...
 - The ability to prevent other people from practicing their invention for a certain period of time (20 yrs)
 - In essence, this results in a temporary technological monopoly and a “head start” on commercializing their invention
- The *United States* receives...
 - **Immediately:** A detailed technical description of the invention (via the patent document) in the beginning
 - **After 20 yrs:** The ability for all citizens to have access to and practice the invention

4. Patents

- A patent is essentially a contract between any government and the inventor.
- **The inventor gets...**
 - exclusive right to profit from the invention for 20 years.
- **The government (e.g. people in that country) gets...**
 - A detailed description of the technology and free/full access to the technology after 20 years (from patent filing date).
- An invention is "*any new and useful art, process, machine, manufacture or composition of matter, or any useful improvement...*"
- After this time, the idea is available for public use.

Examples: Light bulb, phonograph, poly(tetrafluoroethylene), solid state transistor, new software algorithms, etc.

Three main types of patents

1. Utility Patent

- Issued for the invention of a new and useful process, machine, manufacture, or composition of matter, or a new and useful improvement thereof...
- 90% of patents are utility patents.
- Protected for 20 years after filing.

2. Design Patent

- Issued for a new, original, and ornamental design for an article of manufacture.
- Protected for 14 years after patent is granted.

3. Plant Patent

- Issued for a new and distinct, invented or discovered asexually reproduced plant including cultivated sports, mutants, hybrids, and newly found seedlings.
- Protected for 20 years after filing.

4. through 6. Other Legal Documents.

Summary of Types of IP

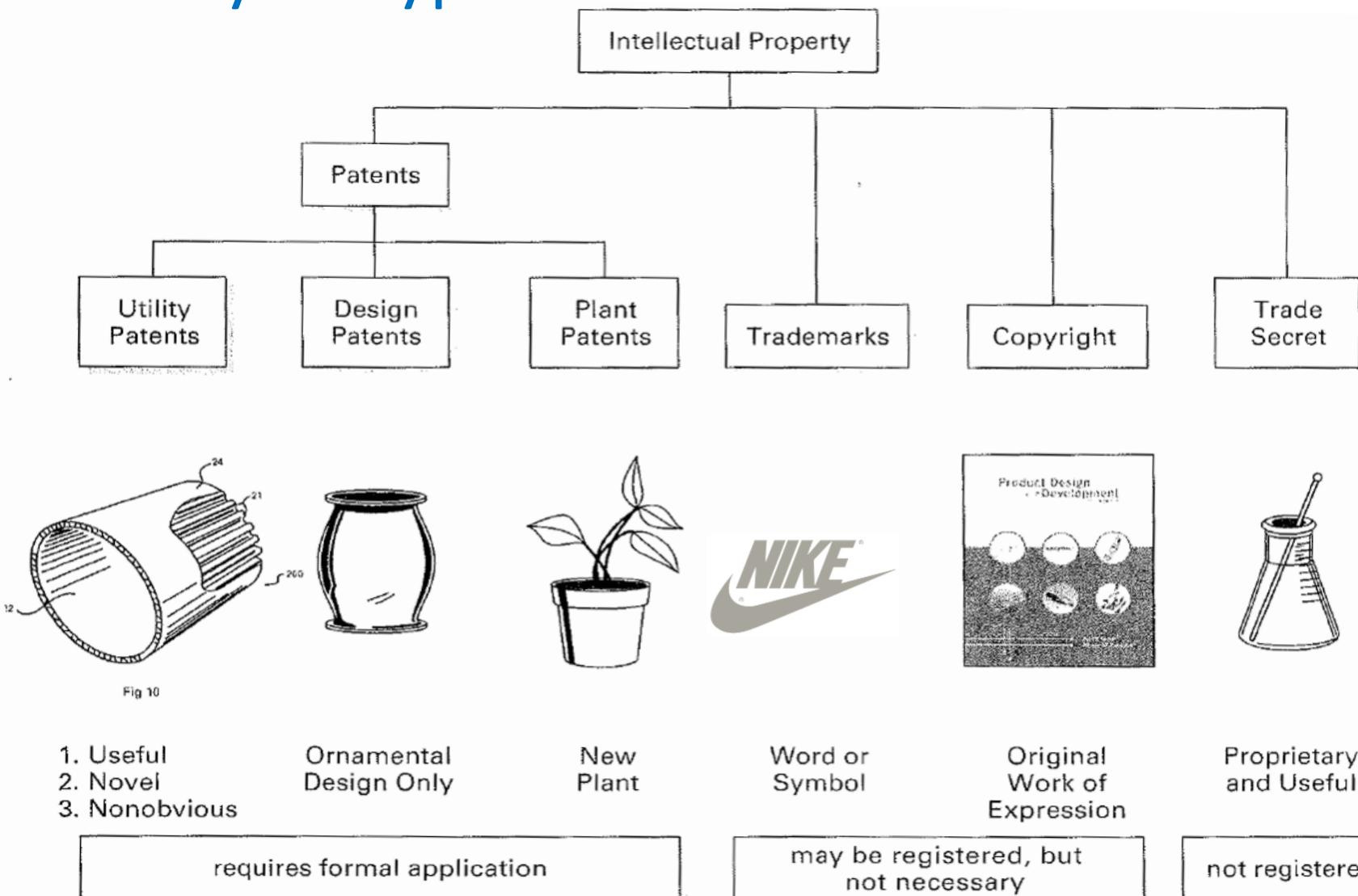


EXHIBIT 14-2 Taxonomy of types of intellectual property relevant to product design and development.

Ulrich and Eppinger. Product Design and Development. 2008.

The First US Patent (before the USPTO)



X 000001
July 31, 1790

The United States.

To all whom these Presents shall come. Greeting.

Whereas Samuel Hopkins of the City of Philadelphia and State of Pennsylvania hath discovered an Improvement, not known or used before such Discovery, in the making of Pot ash and Pearl ash by a new Apparatus and Process, that is to say, in the making of Pearlash 1st by burning the raw Ashes in a Furnace, 2^d by dissolving and boiling them when so burnt in Water, 3rd by drawing off and settling the Dey, and 4th by boiling the Dey into salts which then are the true Pearlash; and also in the making of Pot ash by fluxing the Pearlash so made as aforesaid; which Operations of burning the raw Ashes in a Furnace, preparatory to their Dissolution and boiling in Water, is new, leaves little Residuum; and produces a much greater quantity of Salt: These are therefore in pursuance of the Act, entitled "An Act to promote the Progress of useful Arts", to grant to the said Samuel Hopkins, his Heirs, Administrators and Assigns, for the Term of fourteen Years, the sole and exclusive Right and Liberty of using, and vending to others the said Discovery, of burning the raw Ashes previous to their being dissolved and boiled in Water, according to the true Intent and Meaning of the Act aforesaid. In Testimony whereof I have caused these Letters to be made patent, and the Seal of the United States to be affixed: Given under my Hand at the City of New York this thirty first Day of July in the Year of our Lord one thousand seven hundred & Ninety.

G Washington

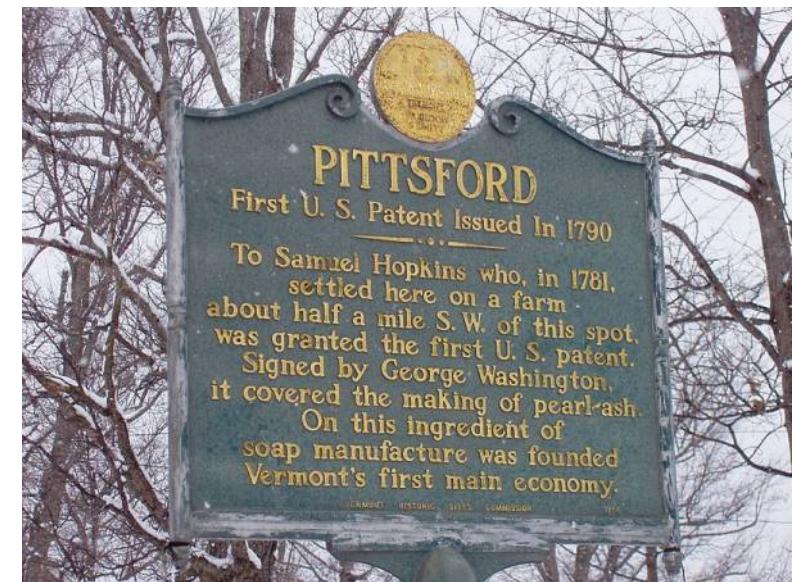
City of New York July 31st 1790.

I do hereby Certify that the foregoing Letters patent were delivered to me in pursuance of the Act, entitled "An Act to promote the Progress of useful Arts"; that I have examined the same, and find them conformable to the said Act.

Edm: Randolph Attorney General for the United States.

The First Patent (before the USPTO)

- On July 31, 1790 Samuel Hopkins was issued the first patent for a process of making potash, an ingredient used in fertilizer.
- The patent was signed by President George Washington. Hopkins was born in Vermont, but was living in Philadelphia, Pa. when the patent was granted.



(Utility) Patent Example -- #1

UNITED STATES PATENT OFFICE.

JOHN RUGGLES, OF THOMASTON, MAINE.

LOCOMOTIVE STEAM-ENGINE FOR RAIL AND OTHER ROADS.

Specification of Letters Patent No. 1, dated July 13, 1836.

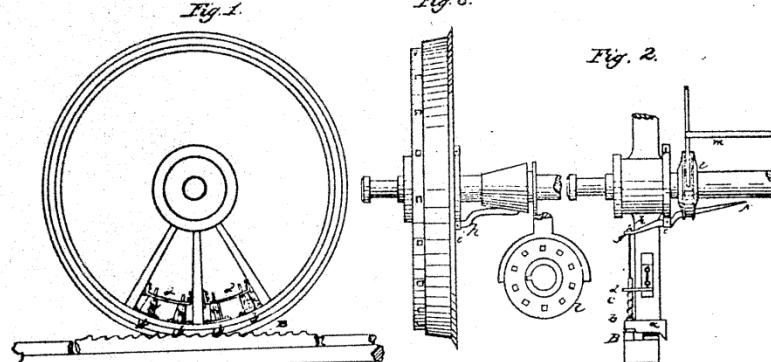
To all whom it may concern:

Be it known that I, JOHN RUGGLES, of Thomaston, in the State of Maine, have invented a new and useful improvement or improvements on locomotive-engines used on railroads and common roads by which inclined planes and hills may be ascended and heavy loads drawn up the same with more facility and economy than heretofore, and by which the evil effects of frost, ice, snows, and mud on the rail causing the wheels to slide are obviated.

their heads with sufficient force to project them outward easily when pressed up into their sockets, the springs react against the top of a cap, or case made to inclose, and protect them from mud or other impediments to their easy action, the case is in form of the section of a cone, and may be seen at W, W, Fig. 1, it is fitted, and screwed firmly to the rim, the upper end being supported by braces d, d, which are fastened to the spokes, attached to the cogs is a rod about half an inch diameter passing up through the spiral

J.Ruggles.
Traction Wheels.
No. 1.

Patented Jul. 13 1836



(Utility) Patent Example -- #430933

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY, ASSIGNOR TO THE
EDISON ELECTRIC LIGHT COMPANY, OF NEW YORK, N. Y.

FILAMENT FOR INCANDESCENT LAMPS.

SPECIFICATION forming part of Letters Patent No. 430,933, dated June 24, 1890.

Application filed November 9, 1882. Serial No. 76,385. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new 5 and useful Improvement in Incandescing Conductors for Electric Lamps, (Case No. 514,) of which the following is a specification.

The object I have in view is to produce incandescing conductors for electric lamps 10 which shall be of high resistance and at the same time have small radiating-surface. This I accomplish by making such incandescing-conductor (which is preferably a flexible carbon filament) hollow, so that its mass is decreased and its resistance consequently raised. 15 To make a hollow flexible filament of carbon, I coat a wire or filament of any suitable material with carbonizable substance, and after pressing to consolidate the fiber of the latter 20 I remove the wire or filament in any suitable way, the result being a hollow flexible filament of carbonizable material, which may be carbonized in the usual manner under pressure or strain, or both, the filament being 25 bent into the desired shape before or after

if desired, the enlarged ends of this filament may be plugged up with carbon, so that such ends will be solid.

It is evident that flexible filaments of any desired shape, either square, round, or oval 50 in cross-section, may be produced, according to the shape of the core used.

In the accompanying drawings, Figure 1 is a view in elevation of a round carbon filament formed according to my invention; Fig. 55 2, a cross-section of the same, and Fig. 3 a vertical section of an enlarged end made solid.

A is the filament, having enlarged ends *a a*, which may be either solid, as seen in Fig. 3, or hollow, the filament being hollow throughout 60 out its length, as seen in Fig. 2.

What I claim is—

1. A tubular incandescing conductor for an electric lamp, substantially as set forth.
2. A tubular filament of carbonizable material for forming the incandescing conductor of an electric lamp, substantially as set forth. 65
3. A tubular flexible carbon filament for the incandescing conductor of an electric lamp, substantially as set forth.

70

Patent Example -- #430933 Figures

(No Model.)

T. A. EDISON.

FILAMENT FOR INCANDESCENT LAMPS.

No. 430,933.

Patented June 24, 1890.

Fig. 1.

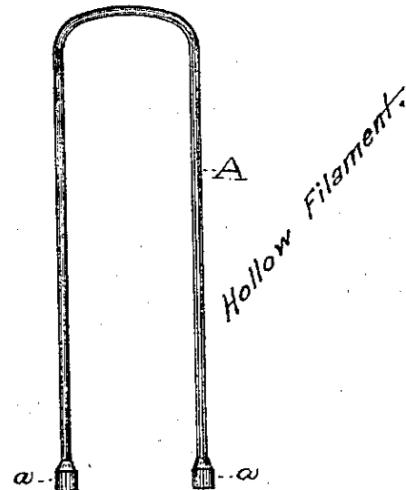


Fig. 2.



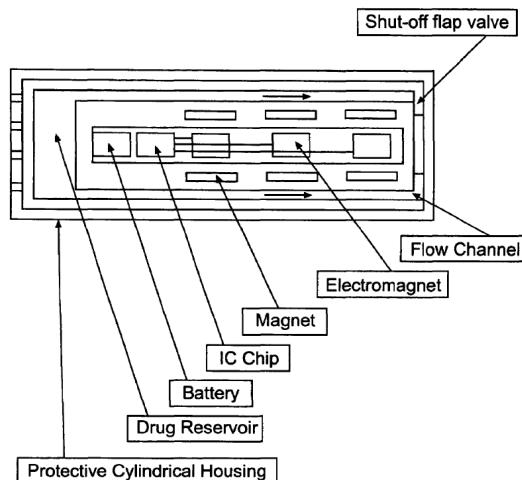
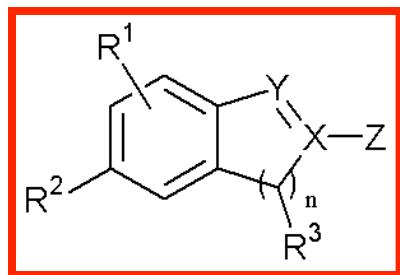
Fig. 3.



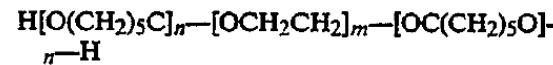
Types of Utility Patents (1)

- **Composition of Matter**
 - Pertains to ingredients comprising chemical or physical elements or properties combined as compounds or mixtures that produce a defined effect.
 - Patentability is defined by the uniqueness of the ingredients, by the novelty of their combination or both.

Examples: New drug, polymer, polymer-drug conjugated, class of materials, machine, widget, electrode interface.



4. A drug delivery composition according to claim 1, wherein the biodegradable polymer is a polymer of formula:



wherein m is in the range 9.09 to 45.45 and n is in the range 6.16 to 45.45.

Types of Utility Patents (2)

- **Methods of Use**
 - A new use for a known composition of matter, process, or apparatus is patentable.

Examples: New beverage container holder, the use of a previously existing drug to treat a different indication, a previously synthesized polymer for a controlled release application

United States Patent [19]		US005384333A	
Davis et al.		[11] Patent Number:	5,384,333
		[45] Date of Patent:	Jan. 24, 1995
[54] BIODEGRADABLE INJECTABLE DRUG DELIVERY POLYMER	4,677,139 6/1987 Feinmann et al. 128/888		
[75] Inventors: Patricia A. Davis; Scott Cousins, both of Miami, Fla.	4,715,369 12/1987 Suzuki et al. 604/49		
[73] Assignee: University of Miami, Miami, Fla.	4,772,470 9/1988 Inoue et al. 424/435		
[21] Appl. No.: 852,948	4,774,227 9/1988 Piez et al. 514/21		
[22] Filed: Mar. 17, 1992	4,793,336 12/1988 Wang 604/304		
[51] Int. Cl. 6 A01N 25/26; A61K 37/22; A61K 9/50	4,853,740 10/1988 Wong 424/427		
[52] U.S. Cl. 514/772.3; 424/417; 424/450; 424/489; 424/501; 264/4.1; 264/4.3; 264/4.4; 523/500	4,865,846 9/1989 Kaufman 604/491.1		
[58] Field of Search ... 424/405, 408, 417, 418, 424/420, 427, 428, 450, 78.04, 78.38, 489, 501; 523/500; 264/4.1, 4.33, 4.4; 428/402.21; 514/772.3	4,882,150 11/1989 Kaufman 424/428		
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Niekraszewicz, "Resorbable fibers and polymers for medicine II Synthesis of copoly(ester ethers)", Wlkra Chem, 16(2), 153'61, 1990.			
Sakurai et al., "Water-soluble high molecular weight polymerized drug preparation", European Pat. Appl., EP397307A2, 14 Nov. 1990.			
Ookayama et al., "Polymer block resorbable biodegradable poly(ether-glycol) block copolymer for controlled Release", 11(1-3) 269-78, 1990.			
Cerny et al., "Polyether-polyester block ... poly(ethylene terephthalate)-poly(ethylene glycol)-poly(ethylene terephthalate)", U.S. Pat. Appl. 338,500, Primary Examiner—Harriman, R. age 4, Assistant Examiner—C. Azpuru, Attorney, Agent, or Firm—Cushman, Darby & Cushman			
[57] Claims, No Drawings			

Triblock copolymers of PCL may already be patented as a composition of matter, but they can also be patented for specific uses (e.g. drug delivery)

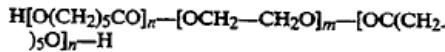
A preferred polymer system is a triblock copolymer. This block copolymer has the general formula:



where A represents a hydrophobic polymer block and B represents a hydrophilic polymer. The biodegradable monomers and polymers are preferably linked through ester groups. Preferred hydrophobic polymers and oligomers include, but are not limited to units selected from polyglycolic acid, polyethylene terephthalate, polybutyl lactose, polycaprolactone, D-polylactic acid, L-polylactic acid, polyglytamic acid, poly-L-lysine and poly-L-aspartic acid.

Preferred hydrophilic polymers include polyethylene glycol, polypropylene glycol and poly vinyl alcohol.

A particularly preferred biodegradable polymer matrix is a triblock copolymer of poly caprolactone (PCL)—polyethylene glycol (PEG)-poly caprolactone. This polymer contains ester bonds which hydrolyze in a hydrophilic environment, such as the eye. This preferred polymer has the formula:



Types of Utility Patents (3)

- **Method of Making**
 - A process that results in the creation of an apparatus or composition of matter.

Examples: Electro-spinning of a polymer into a fibrous mat, injection-molding of a polymer, 3D printing!

United States Patent [19]

Sachs et al.



US005204055A

[11] Patent Number: 5,204,055

[45] Date of Patent: Apr. 20, 1993

[54] THREE-DIMENSIONAL PRINTING TECHNIQUES

[75] Inventors: Emanuel M. Sachs, Somerville; John S. Haggerty, Lincoln; Michael J. Cima, Lexington; Paul A. Williams, Concord, all of Mass.

[73] Assignee: Massachusetts Institute of Technology, Cambridge, Mass.

[21] Appl. No.: 447,677

[22] Filed: Dec. 8, 1989

[51] Int. Cl.⁵ B22F 7/02; B29C 35/02; B29C 67/02; C04B 35/64

[52] U.S. Cl. 419/2; 264/23; 264/25; 264/60; 264/69; 264/71; 264/113; 264/128; 419/5; 419/10

[58] Field of Search 427/57, 197-199, 427/203-205, 14.1, 265, 266, 201, 202; 264/23, 25, 113, 128, 60, 71, 69; 419/2, 5, 10

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Wohlers, Terry, "Creating Parts by the Layers", Cadence, Apr., 1989, pp. 73-76.

Primary Examiner—Evan Lawrence
Attorney, Agent, or Firm—Robert F. O'Connell

[57] ABSTRACT

A process for making a component by depositing a first layer of a fluent porous material, such as a powder, in a confined region and then depositing a binder material to selected regions of the layer of powder material to produce a layer of bonded powder material at the selected regions. Such steps are repeated a selected number of times to produce successive layers of selected regions of bonded powder material so as to form the desired com-

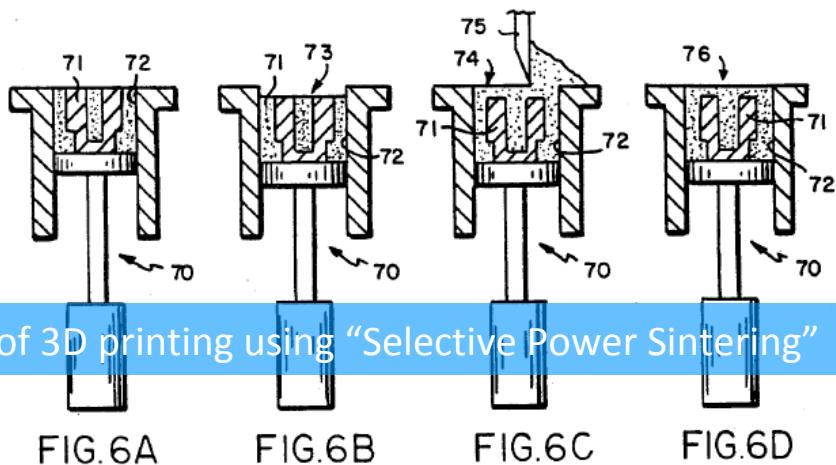


FIG. 6A

FIG. 6B

FIG. 6C

FIG. 6D

Slicing techniques...

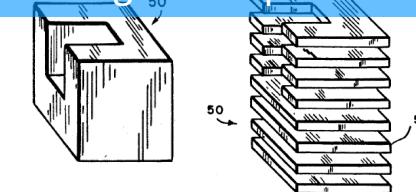


FIG. 11

FIG. 12

Types of Utility Patents (4)

- **Apparatus**
 - Devices, machines, engines, or mechanisms etc., that result in an observable output when activated.
 - The apparatus may be unique by virtue of a part or parts and/or how the parts are arranged to produce the intended result..

Examples: New tool for electro-spinning, kind of microscope, new kinds of medical devices.

Combination Patents

(12) **United States Patent**
Cook

(10) **Patent No.: US 6,863,644 B1**
(45) **Date of Patent: Mar. 8, 2005**

(54) **BEVERAGE CONTAINER HOLDER**

(75) Inventor: **Matthew R. Cook**, Chicago, IL (US)

(73) Assignee: **LBP Manufacturing, Inc.**, Cicero, 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.: **10/344,632**

(22) PCT Filed: **Aug. 24, 2001**

(86) PCT No.: **PCT/US01/26543**

§ 371 (c)(1),
(2), (4) Date: **Jun. 5, 2003**

(87) PCT Pub. No.: **WO03/018303**

PCT Pub. Date: **Mar. 6, 2003**

(51) Int. Cl.⁷ **B31B 49/02**

(52) U.S. Cl. **493/141**; 493/69; 493/142;
493/151; 493/264; 493/409

(58) Field of Search 493/69, 141, 142,
493/150, 151, 183, 104, 259, 264, 291,
408, 409, 125, 108

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Primary Examiner—Rinaldi I Rada

Assistant Examiner—Sameh H. Tawfik

(74) Attorney, Agent, or Firm—Brinks Hofer Gilson & Lione

(57) **ABSTRACT**

A machine and method for producing beverage container holders of consistently high quality at high production rates and at an economical cost is disclosed herein. Beverage container holders (500) can be produced on the machine using the method disclosed herein at a rate of 50,000 beverage container holders per hour. The initial step of introducing the blanks 810) into the machine's conveying mechanism assures that the blanks are properly aligned and have a predetermined spacing there between, which avoids jamming of the machine and the resulting work stoppage (FIG. 2). The process includes steps for pre-breaking or pre-folding the flaps (FIG. 5) which enable the final folding of the flaps to be performed with the necessary reliability and speed. All except the final step of the manufacturing process are performed while the blanks are being conveyed at a constant high rate along the length of the machine.

Examples: New beverage container holder...

What is the significance of this patent?

UNITED STATES PATENT OFFICE

2,569,347

CIRCUIT ELEMENT UTILIZING SEMICONDUCTIVE MATERIAL

William Shockley, Madison, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

Application June 26, 1948, Serial No. 35,423

34 Claims. (Cl. 332—52)

1

This invention relates to means for and methods of translating or controlling electrical signals and more particularly to circuit elements utilizing semiconductors and to systems including such elements.

One general object of this invention is to provide new and improved means for and methods of translating and controlling, for example amplifying, generating, modulating, intermodulating or converting, electric signals.

Another general object of this invention is to enable the efficient, expeditious and economic translation or control of electrical energy.

In accordance with one broad feature of this invention, translation and control of electric signals is effected by alteration or regulation of the conduction characteristics of a semiconductive body. More specifically, in accordance with one broad feature of this invention, such translation and control is effected by control of the characteristics, for example the impedance, of a layer or barrier intermediate two portions of a semiconductive body in such manner as to alter advantageously the flow of current between the two portions.

2

ductive material comprising two zones of material of opposite conductivity type separated by a barrier, means for making external electrical connections respectively to each zone and means for 5 making a third connection to the body at the barrier for controlling the flow of current between the other two connections.

An additional feature pertains to a semiconductive body comprising two zones of material of 10 like conductivity type with an intermediate zone of material of opposite conductivity type, the zones being separated respectively by barriers, means for making electrical connections respectively to the two zones, and means for making a 15 third connection to the intermediate zone for controlling the effectiveness of a barrier to thereby control the flow of current between the zones of like material.

Another feature of this invention involves a 20 semiconductive body which may be used for voltage and power amplification when associated with means for introducing mobile carriers of charge to the body at relatively low voltage and extracting like carriers at a relatively high voltage.

Sept. 25, 1951

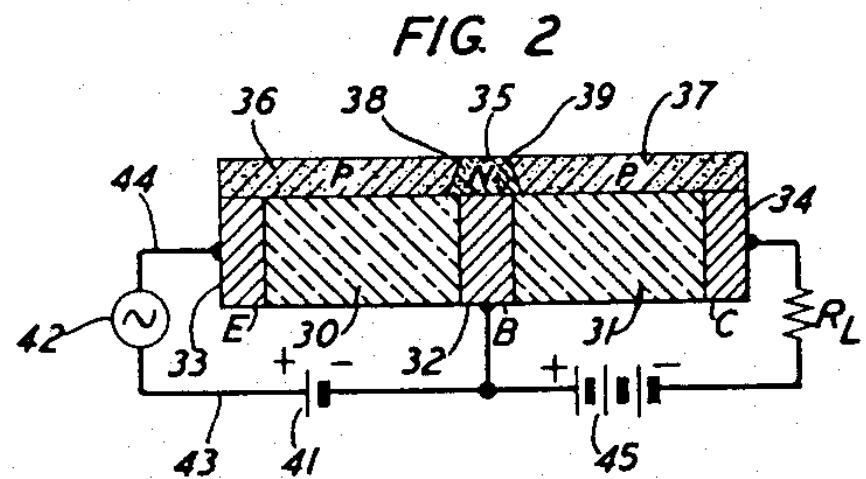
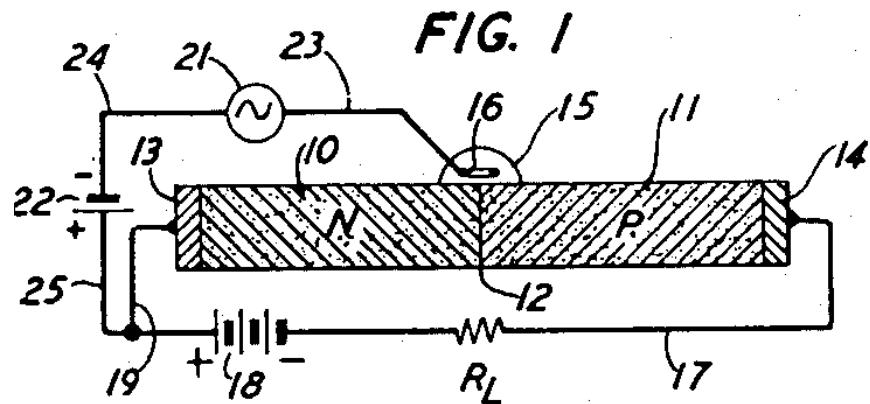
W. SHOCKLEY

2,569,347

CIRCUIT ELEMENT UTILIZING SEMICONDUCTIVE MATERIAL

Filed June 26, 1948

3 Sheets-Sheet 1



What is the significance of this patent?

(12) **United States Patent**
Page

(10) **Patent No.:** US 6,285,999 B1
(45) **Date of Patent:** Sep. 4, 2001

(54) **METHOD FOR NODE RANKING IN A LINKED DATABASE**

(75) Inventor: **Lawrence Page**, Stanford, CA (US)
(73) Assignee: **The Board of Trustees of the Leland Stanford Junior University**, Stanford, CA (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.: **09/004,827**

(22) Filed: **Jan. 9, 1998**

Related U.S. Application Data

(60) Provisional application No. 60/035,205, filed on Jan. 10, 1997.

(51) **Int. Cl.⁷** **G06F 17/30**

(52) **U.S. Cl.** **707/5; 707/7; 707/501**

(58) **Field of Search** 707/100, 5, 7, 707/513, 1-3, 10, 104, 501; 345/440; 382/226, 229, 230, 231

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(List continued on next page.)

Primary Examiner—Thomas Black

Assistant Examiner—Uyen Le

(74) *Attorney, Agent, or Firm*—Harrity & Snyder L.L.P.

(57) **ABSTRACT**

A method assigns importance ranks to nodes in a linked database, such as any database of documents containing citations, the world wide web or any other hypermedia database. The rank assigned to a document is calculated from the ranks of documents citing it. In addition, the rank of a document is calculated from a constant representing the probability that a browser through the database will randomly jump to the document. The method is particularly useful in enhancing the performance of search engine results for hypermedia databases, such as the world wide web, whose documents have a large variation in quality.

29 Claims, 3 Drawing Sheets

A Patent Must Be...

[Note: Patents and IP are ultimately a construct to help promote new technologies and their application to commerce.]

- **Novel**
 - Is it described **ANYWHERE** in the prior art?
 - If so, it is not novel
- **Non-obvious**
 - Cannot patent thinks like “walking” or “gravity”
- **Useful**
 - Should provide some technological value
 - Very liberal interpretations of “useful” are often employed

Novelty

You cannot get a valid US patent if it was:

- Publicly known, used, on sale, or offered for sale in the US.
- Described in a printed publication to which the public has access.
- Disclosed in a public forum (e.g. conference, thesis defense, etc.)
- Made by someone else who didn't try to restrict access to it.

Useful and Non-Obvious

- **A patent must be non-obvious...**
 - A patent will not be granted unless the invention being claimed is from what has been described or used before, unobvious, at the time it was made, to a person having ordinary skill in the art to which the invention pertains or with which it is mostly connected.
- **A patent must be useful...**
 - Liberal judgment prevails, typically...

“Useful” Patent #1

United States Patent [19]

Amiss et al.

[11] Patent Number: 5,443,036

[45] Date of Patent: Aug. 22, 1995

[54] METHOD OF EXERCISING A CAT

[76] Inventors: Kevin T. Amiss, 255 S. Pickett St.,
#301, Alexandria, Va. 22304; Martin
H. Abbott, 10549 Assembly Dr.,
Fairfax, Va. 22030

[21] Appl. No.: 144,473

[22] Filed: Nov. 2, 1993

[51] Int. Cl.⁶ A01K 29/00

[52] U.S. Cl. 119/707

[58] Field of Search 119/702, 707, 174, 905;
446/485

[56] References Cited

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Primary Examiner—Todd E. Manahan

[57] ABSTRACT

A method for inducing cats to exercise consists of directing a beam of invisible light produced by a handheld laser apparatus onto the floor or wall or other opaque surface in the vicinity of the cat, then moving the laser so as to cause the bright pattern of light to move in an irregular way fascinating to cats, and to any other animal with a chase instinct.

4 Claims, 1 Drawing Sheet

“Useful” Patent #1

U.S. Patent

Aug. 22, 1995

5,443,036

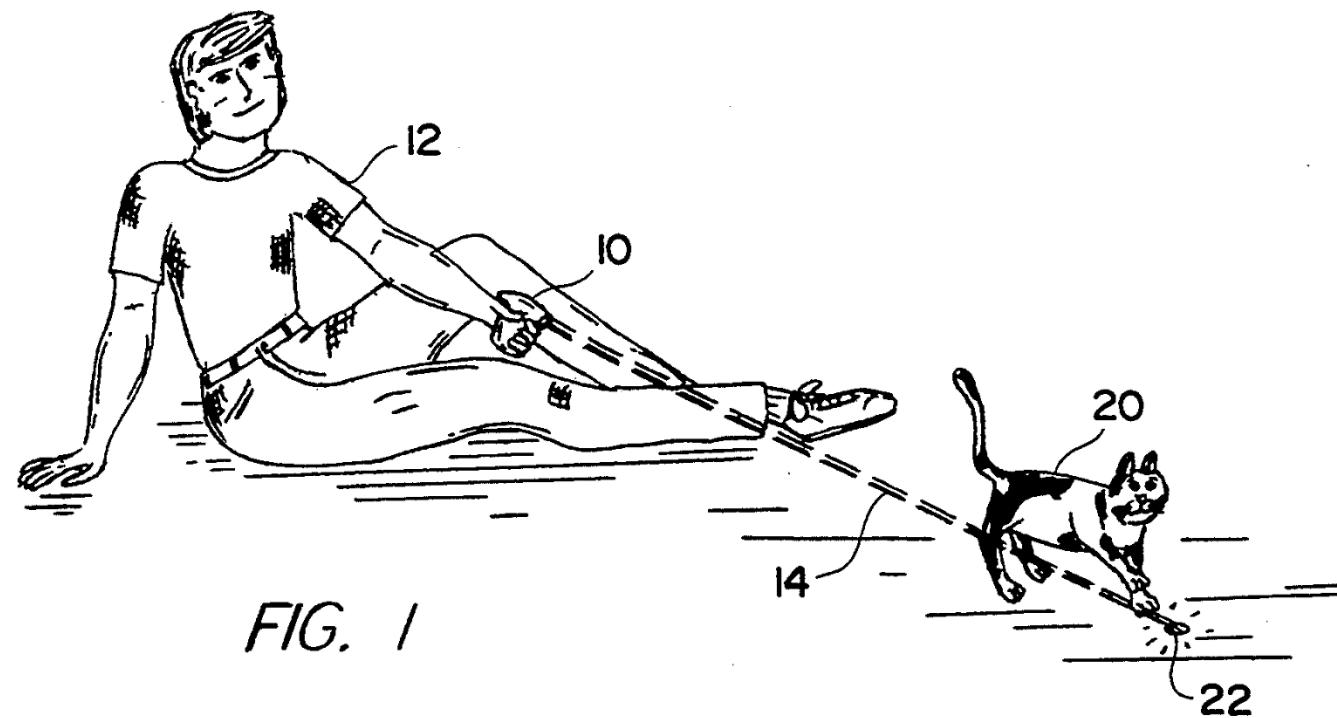


FIG. 1

“Useful” Patent #2

United States Patent [19]

Holmes

[11] 4,320,756
[45] Mar. 23, 1982

[54] FRESH-AIR BREATHING DEVICE AND METHOD

[76] Inventor: William O. Holmes, 1331 Old Country Rd., Belmont, Calif. 94402

[21] Appl. No.: 237,869

[22] Filed: Feb. 25, 1981

[51] Int. Cl.³ A62B 7/10; A62B 7/12

[52] U.S. Cl. 128/206.12; 128/207.14;
128/207.12; 128/200.24

[58] Field of Search 128/200.24, 201.11,
128/205.25, 205.12, 205.27, 205.28, 205.29,
206.12, 206.15, 206.21, 206.28, 207.12, 207.14

[56] References Cited

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Germany | 128/207.12 |

Primary Examiner—Henry J. Recla
Attorney, Agent, or Firm—Phillips, Moore,
Weissenberger, Lempio & Majestic

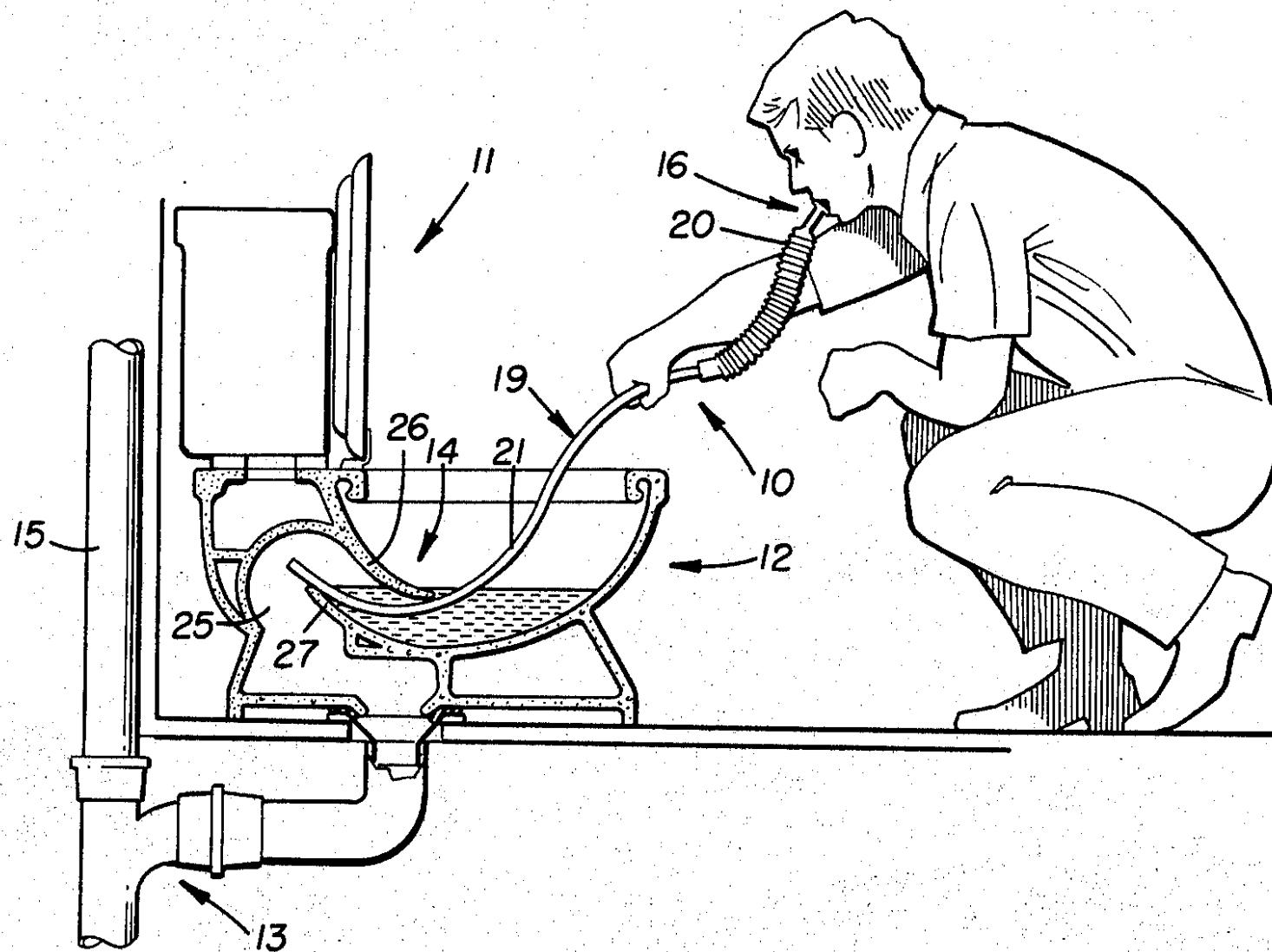
[57]

ABSTRACT

The recent rash of fires in high-rise hotels and deaths occasioned thereby has given rise to the need for a breathing device and method for supplying a hotel guest and/or fireman with fresh air until he can be rescued. The device and method of this invention provide for the insertion of a breathing tube through the water trap of a toilet to expose an open end thereof to fresh air from a vent pipe connected to a sewer line of the toilet, to enable the user to breathe fresh air through the tube.

4 Claims, 5 Drawing Figures

“Useful” Patent #2



“Useful” Patent #3



US005901666A

United States Patent Belisle

[19]

[11] Patent Number: **5,901,666**
[45] Date of Patent: **May 11, 1999**

[54] PET DISPLAY CLOTHING

[76] Inventor: **Brice Belisle**, 112 Conselyea St.,
Brooklyn, N.Y. 11211

[21] Appl. No.: **08/920,217**

[22] Filed: **Aug. 25, 1997**

[51] Int. Cl.⁶ **A01K 29/00**

[52] U.S. Cl. **119/497**

[58] Field of Search 119/452, 417,
119/421, 857, 497; 2/75, 69, 247, 102;
224/148.1, 148.2

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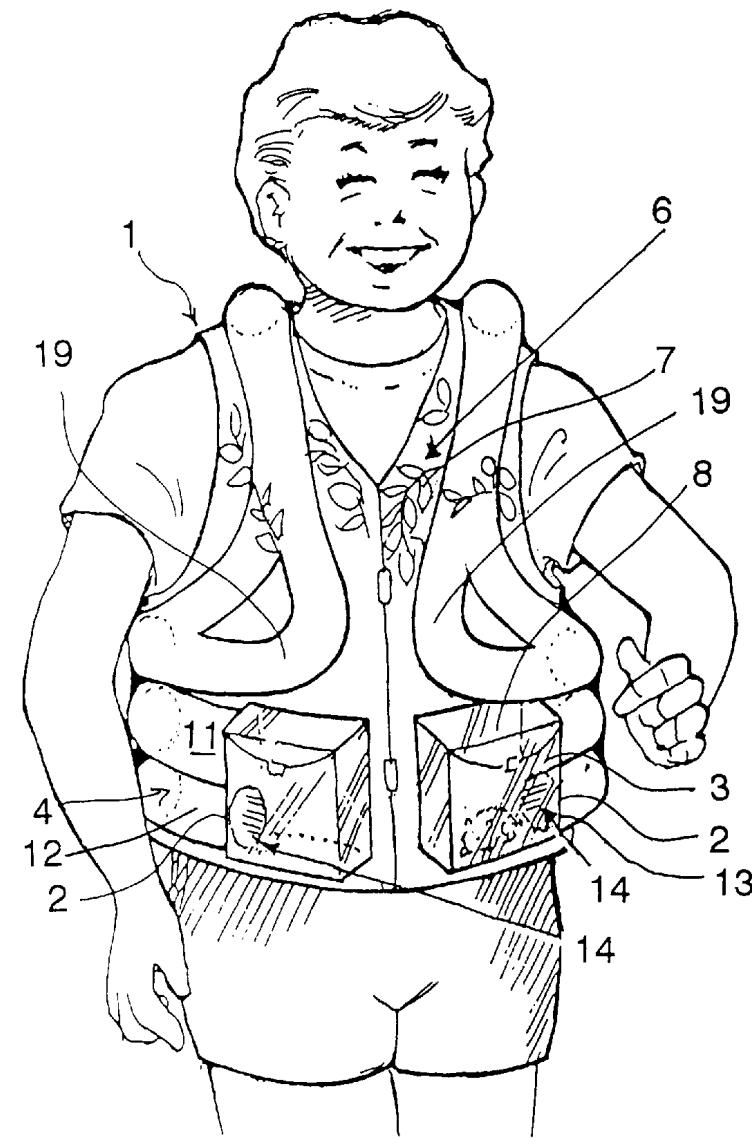
Primary Examiner—Thomas Price
Attorney, Agent, or Firm—Robert W. J. Usher

[57] ABSTRACT

A vest or belt is integrally formed with tubular, pet receiving passageways which extend around the wearer's body and terminate in pocket-like chambers for feeding and retrieval. Outer wall portions of the passageways are transparent so that a pet moving along the passageways can be seen by a spectator. Graphics or indicia depicting the pet's habitat or a pet story are marked on the vest and extend across portions of the passageways masking delineations or depicting the passageways as burrows.

14 Claims, 1 Drawing Sheet

“Useful” Patent #3



“Useful” Patent #4



US 20060094518A1

(19) **United States**

(12) **Patent Application Publication**

Leavitt

(10) **Pub. No.: US 2006/0094518 A1**

(43) **Pub. Date: May 4, 2006**

(54) **MANUALLY SELF-OPERATED
BUTT-KICKING MACHINE**

(76) Inventor: **J. Reese Leavitt**, Melba, ID (US)

Correspondence Address:
J. Reese Leavitt
7611 Murphy Road
Melba, ID 83641 (US)

(21) Appl. No.: **10/977,894**

(22) Filed: **Oct. 29, 2004**

Publication Classification

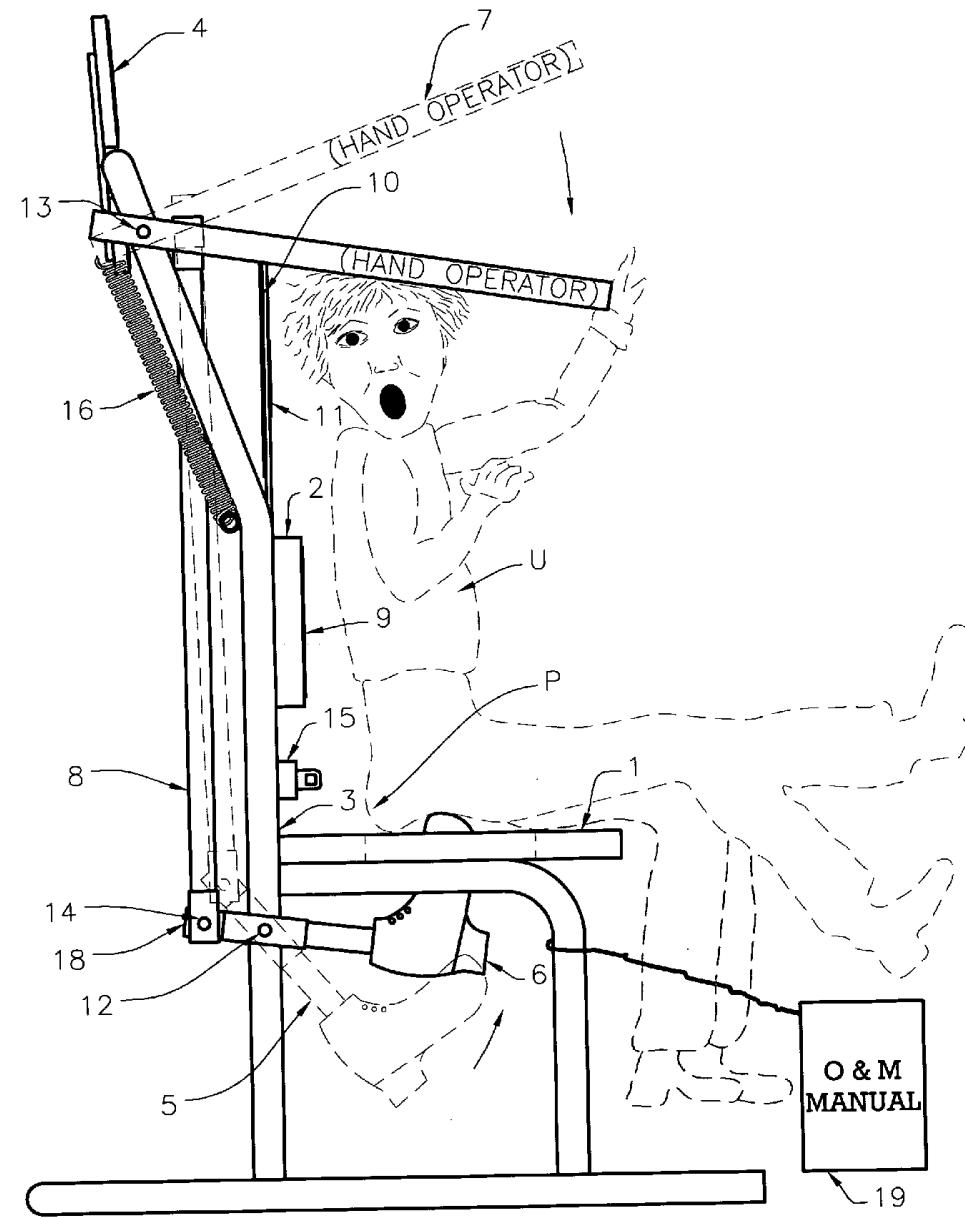
(51) **Int. Cl.**
A63H 37/00 (2006.01)
A63J 23/00 (2006.01)

(52) **U.S. Cl.** **472/51**

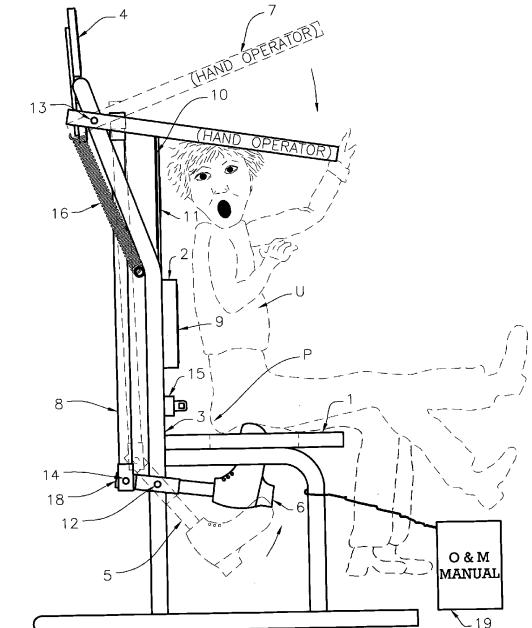
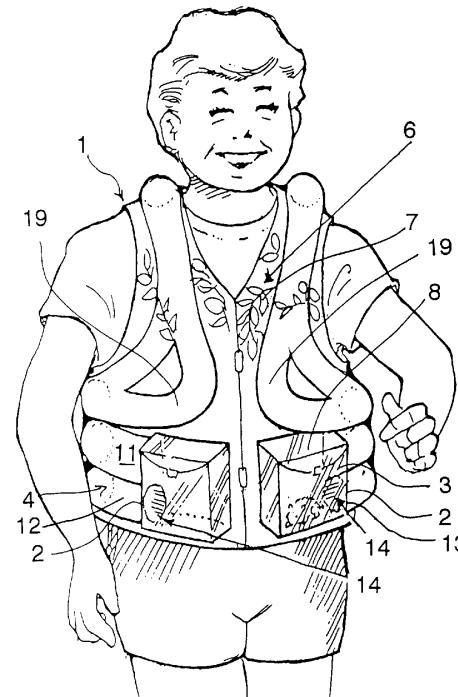
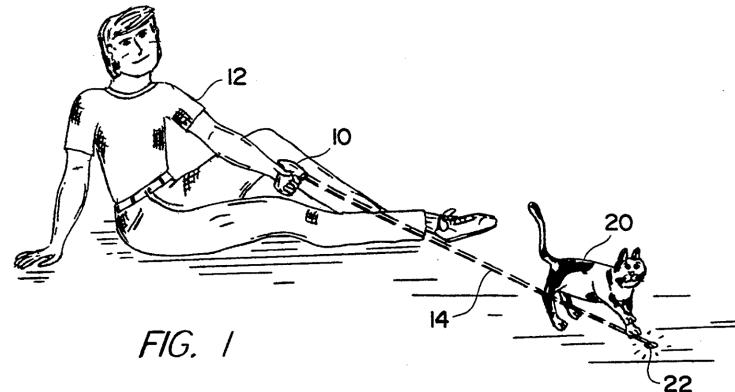
ABSTRACT

The Manually Self-Operated Butt-Kicking Machine is in the form of a chair with a hole in the bench. The user sits on the bench with his posterior centered over the hole. A seatbelt holds the user in place. There is a kicking mechanism located below the hole, which has a boot attached to it. When the user or operator pulls the hand-operated lever, the boot kicks the users' posterior through the hole in the bench. The Butt kicker is very user friendly with the number of kicking repetitions, type of repetitions, speed of operation, amplitude or height of the kicking cycle, magnitude of the kicking force, and impact and energy of the kick all controlled by the user or operator. This invention is a new, novel, and unique machine with multiple uses, which range from amusement to fundraising and from motivation to discipline. The objectives of this invention are also many, including, but not limited to, teambuilding, self-therapy, to inspire creativity, and to be used as a model for future devices and works of art.

“Useful” Patent #4



What is YOUR favorite?



QUESTION: If can patent these ridiculous inventions, then why not just patent ANYTHING & EVERYTHING?

What is the real value of a patent?

- Think of all human knowledge as an expanding landmass.
- A patent is a collection of claims to a specific subset of knowledge.
- How you protect that claim is up to you.



Enforcing Patents

Patent Applications

- Provides no rights against anyone using their invention until the patent issues.
- “Patent pending” only gives notice of possible future patent rights.

Patent Rights

- Does not give the explicit right to make, use, or sell their own invention.
- Only provides right to litigate against others
- Patents are not “self-enforcing”
- Litigation → Lawyers → \$\$\$



Carnegie Mellon vs. Marvell

Carnegie
Mellon
University



Marvell patent verdict grows to \$1.54 billion

Tue, Apr 1 2014

By Jonathan Stempel

(Reuters) - A federal judge ordered Marvell Technology Group Ltd to pay nearly \$1.54 billion for infringing two hard disk drive patents held by Carnegie Mellon University, nearly one-third more than a jury had previously awarded.

The award, however, was less than half the maximum \$3.75 billion that Carnegie Mellon had sought, though Marvell still plans an appeal. Shares of Marvell rose 4.1 percent to \$16.40 in pre-market trading.

In her decision late Monday, U.S. District Judge Nora Barry Fischer in Pittsburgh, where Carnegie Mellon is based, said "enhanced damages" were justified against Marvell and its Marvell Semiconductor unit because the university showed that they deliberately copied its patents through "known willful infringement."

The payout is equal to 1.23 times the sum of the original \$1.17 billion jury verdict from December 2012, plus \$79.6 million for alleged infringements that the jury did not consider because it had lacked recent financial information at the time.

"This award is sufficient to penalize Marvell for its egregious behavior and to deter future infringement activities," the judge wrote in a 72-page decision.



Anatomy of a Patent

- Introductory Information
 - Assignee
 - Inventors
 - Priority dates
 - Patent #
- Abstract
- Discussion of prior disclosures and patents
- Discussion of invention
- Examples
- Claims

First Page (Information and Abstract)



US005204055A

United States Patent [19]

Sachs et al.

[11] Patent Number: 5,204,055

[45] Date of Patent: Apr. 20, 1993

[54] THREE-DIMENSIONAL PRINTING
TECHNIQUES

[75] Inventors: Emanuel M. Sachs, Somerville; John S. Haggerty, Lincoln; Michael J. Cima, Lexington; Paul A. Williams, Concord, all of Mass.

[73] Assignee: Massachusetts Institute of Technology, Cambridge, Mass.

[21] Appl. No.: 447,677

[22] Filed: Dec. 8, 1989

[51] Int. Cl.⁵ B22F 7/02; B29C 35/02;
B29C 67/02; C04B 35/64

[52] U.S. Cl. 419/2; 264/23;
264/25; 264/60; 264/69; 264/71; 264/113;
264/128; 419/5; 419/10

[58] Field of Search 427/57, 197-199,
427/203-205, 14.1, 265, 266, 201, 202; 264/23,
25, 113, 128, 60, 71, 69; 419/2, 5, 10

[56] References Cited

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Wohlers, Terry, "Creating Parts by the Layers", Cadence, Apr., 1989, pp. 73-76.

Primary Examiner—Evan Lawrence
Attorney, Agent, or Firm—Robert F. O'Connell

[57] ABSTRACT

A process for making a component by depositing a first layer of a fluent porous material, such as a powder, in a confined region and then depositing a binder material to selected regions of the layer of powder material to produce a layer of bonded powder material at the selected regions. Such steps are repeated a selected number of times to produce successive layers of selected regions of bonded powder material so as to form the desired component. The unbonded powder material is then removed. In some cases the component may be further processed as, for example, by heating it to further strengthen the bonding thereof.

42 Claims, 6 Drawing Sheets

Next N+1 Pages (Figures)

N = 6 in this case (6 sheets with multiple figures) U.S. Patent

Apr. 20, 1993

Sheet 5 of 6

5,204,055

U.S. Patent

Apr. 20, 1993

Sheet 1 of 6

5,204,055

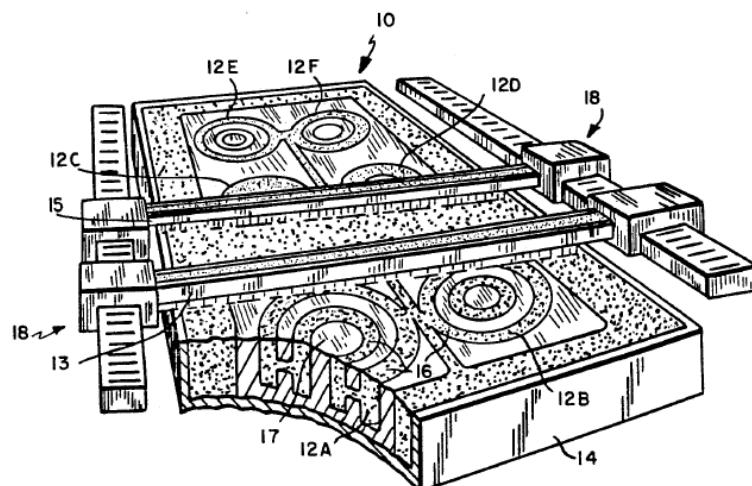


FIG. 1

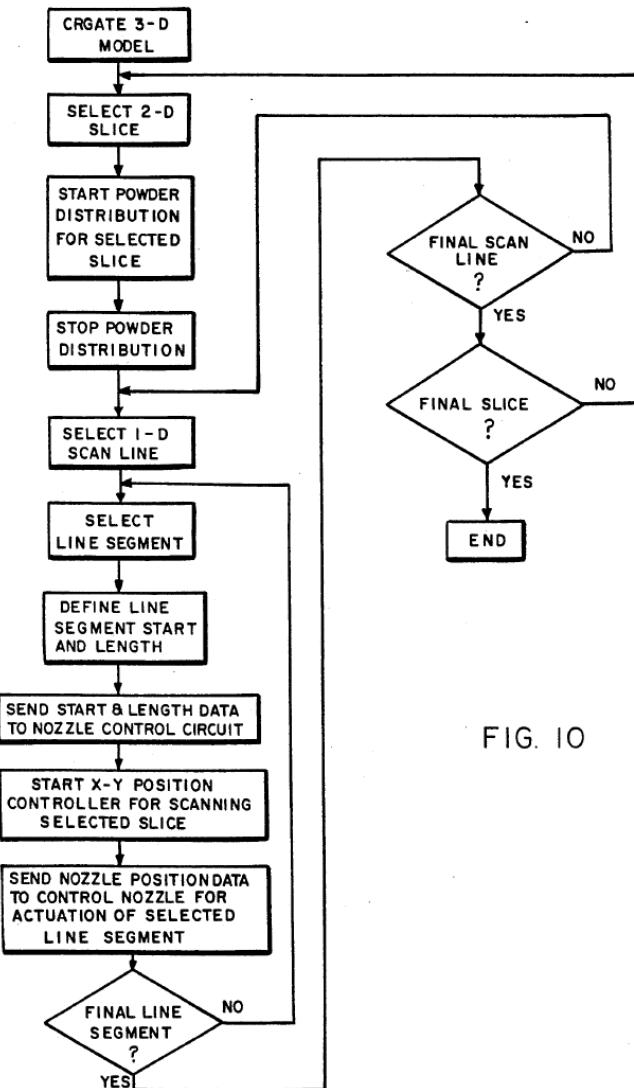


FIG. 10

Starting at Page N+2 (Intro, summary)

The next section of the patent document includes the following components

- **Introduction**
- **Background of the Invention**
 - Provides a technological context for the invention
 - Lists prior disclosures and patents from any inventor
- **Summary of the Invention**
 - Briefly summarizes the invention
- **Description of the Drawings**
- **Detailed Description of the Invention**
 - This section offers a detailed description so that others can (in principle) gain access to the technological achievements.

For US Patent #5204055, this section comprises pages 8-13

<p style="text-align: center;">1 THREE-DIMENSIONAL PRINTING TECHNIQUES INTRODUCTION</p> <p>This invention relates generally to the manufacture of tooling and prototype parts and, more particularly, to the use of three-dimensional printing techniques using computer models therefor.</p> <p style="text-align: center;">BACKGROUND OF THE INVENTION</p> <p>Two needs in providing effective industrial productivity and competitiveness lie in the reduction in time required to bring new products to the marketplace and the need for providing for flexible manufacture of products in small quantities. Thus, it is desirable to provide rapid part turnaround with a minimal investment in tooling. Techniques for doing so should have the ability to tailor designs to specific tasks, to shorten the cycle time from design to manufacturing, and/or to manufacture in very small lot sizes, as low as a single component, all at reasonable cost. A major contributor to the time required to bring new products to market is the time required to fabricate functioning prototypes. Rapid prototyping can shorten the product development cycle and improve the design process by providing rapid and effective feedback to the designer. Moreover, some applications require rapid prototyping of non-functional parts for use in assessing the aesthetic aspects of a design or the fit and assembly thereof.</p> <p>Another major contributor to the time to bring a product to market is the time required to develop tooling, such as molds and dies. For some types of tooling, such as injection molding dies, the turnaround time for the design and fabrication of a tool routinely extends to several months. The long lead times are due to the fact that tooling is often one of a kind and can be extremely complex, requiring a great deal of human attention to detail. Thus, tooling not only affects lead time, but also manufacturing costs as well. In fact, tooling costs often determine the minimum economic batch size for a given process. Prototyping requirements, tooling lead time, and tooling cost are related in that it is the combination of long lead times and high cost which make it impractical to fabricate preproduction prototypes by the same process that will be used in production.</p> <p>In the past several years, there has been considerable interest in developing computerized, three-dimensional printing techniques, sometimes referred to as "desktop manufacturing" techniques where no tooling is required. One such system is known, the SLA 1 System, made and sold by 3D Systems, Inc. of Valencia, Calif. This system operates on a principle called stereolithography wherein a focused ultra-violet (UV) laser is vector scanned over the top of a bath of a photopolymerizable liquid polymer plastic material. The UV laser causes the bath to polymerize where the laser beam strikes the surface of the bath, resulting in the creation of a first solid plastic layer at and just below the surface. The solid layer is then lowered into the bath and the laser generated polymerization process is repeated for the generation of the next layer, and so on, until a plurality of superimposed layers forming the desired part is obtained. The most recently created layer in each case is always lowered to a position just above the surface of the liquid polymer bath. An alternative to SLA, sometimes called Selective Laser Sintering (SLS) has also been proposed by DTM</p>	<p style="text-align: center;">5,204,055 2</p> <p>Corporation of Austin, Texas. In such system, a laser beam is used to sinter areas of a layer of loosely compacted plastic powder, the powder being applied layer by layer. The term "sintering" refers to the process by which particulates, such as powdered plastics, are caused to adhere into a solid mass by means of externally applied energy. A SLS system uses the optical energy supplied by a laser for such purpose.</p> <p>Thus, a thin layer of powder is spread evenly onto a flat surface with a roller mechanism. The thin powder surface is then raster-scanned with a high-power laser beam from above. The powder material that is struck by the laser beam is fused together. The areas not hit by the laser beam remain loose and fall from the part when it is removed from the system. Successive layers of powder are deposited and raster-scanned, one on top of another, until an entire part is complete. Each layer is sintered deeply enough to bond it to the preceding layer. A similar laser sintering approach has been proposed by Hydrometics, Inc. of Chicago, Ill. Another process suggested by the same company is designated as a Laminated Object Manufacturing (LOM) technique wherein thin metallic foil layers are cut out to appropriate shapes to form a part and the shaped layered pieces are laid one top of the other and suitably bonded to form the part involved.</p> <p>Another process suggested for creating 3D models and prototypes, sometimes called Ballistic Particle Manufacturing (BPM), has been proposed by Automated Dynamic Corporation of Troy, N.Y. This process uses an ink-jet printing technique wherein an ink-jet stream of liquid molten metal or a metal composite material is used to create three-dimensional objects under computer control, similar to the way an ink-jet printer produces two-dimensional graphic printing. A metal or metal composite part is produced by ink-jet printing of successive cross sections, one layer after another, to a target using a cold welding (i.e., rapid solidification) technique, which causes bonding between the particles and the successive layers.</p> <p>Still another technique, sometimes called Photocatalytic Machining, proposed by Formgraphic Engine Co. of Berkeley, Calif., uses intersecting laser beams to selectively harden or soften a polymer plastic block. The underlying mechanism used is the photocatalytic cross-linking or degradation of the material.</p> <p>It is desirable to devise a technique for providing such layered parts which will work satisfactorily with ceramic or metal materials, or combinations of such materials with each other or with other materials, but which will also work satisfactorily with plastic particles or with other inorganic materials. Such a technique could be more universally employed for the manufacture of components from a larger variety of materials than the currently proposed techniques.</p> <p style="text-align: center;">SUMMARY OF THE INVENTION</p> <p>In accordance with a preferred embodiment of the invention, powdered material, e.g., a powdered ceramic, a powdered metal, or a powdered plastic, is deposited in sequential layers one on top of the other. Following the deposit of each layer of powdered material, a liquid binder material is selectively supplied to the layer of powdered material using an ink-jet printing technique in accordance with a computer model of the three-dimensional part being formed. Following the sequential application of all of the required powder</p>
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More Thoughts on “Discussion of the Invention”

- Must fully describe the invention such that a person having ordinary skill in the art can replicate, reproduce the composition of matter, method, process, apparatus, etc.
- More or less “written in stone” at the time of a non-provisional application.

After “Discussion of Invention” – Examples

- Provides specific examples of how the invention has been reduced to practice.
- Can also provide information for other kinds of examples that haven’t been reduced to practice.

In addition to the above discussed embodiments of the invention, further variations or modifications of the techniques disclosed above will occur to those in the art. For example, the binder, rather than being applied in a wet state, can be applied in a dry state using materials having a low melting point so that, when applied and heated, the melted material penetrates the powder particles and when hardened bonds them together. Further, two or more different types of powder particles can be applied via two or more separate powder dispersion heads so as to deposit the different powders at different regions of the part being formed. The powder at such regions can then be bonded using the same or different binder materials so that different physical characteristics can be obtained at such different regions. Other modifications or extensions of the invention may occur to those in the art within the spirit and scope thereof. Hence, the invention is not to be construed as limited to the specific embodiments described above, except as defined by the appended claims.

- For US Patent #5204055, this section is carefully nested in the document.
- For other applications, the listed examples can be more explicitly stated.

Last Couple of Pages – Claims

11	5,204,055	12	5,204,055	13	5,204,055	14
be discussed in further detail. Such an approach can be used for a single nozzle as described above and can be readily adapted for use with a binder head having multiple nozzles, e.g., an array of nozzles for providing an effective linear deposition of binder material, or a plurality of relatively shorter, multiple arrays thereof.	(4) removing fluent porous material which is not at said one or more selected regions to provide the component.	25	25. A process in accordance with claims 1 or 5 wherein said further material is applied as a plurality of jet streams.	5	said further material and the liquid in said wet powdered material.	
In addition to the above discussed embodiments of the invention, further variations or modifications of the techniques disclosed above will occur to those in the art. For example, the binder, rather than being applied in a wet state, can be applied in a dry state using materials having a low melting point so that, when applied and heated, the melted material penetrates the powder particles and when hardened bonds them together. Further, two or more different types of powder particles can be applied via two or more separate powder dispersion heads so to deposit the different powders at different regions of the part being formed. The powder at such regions can then be bonded using the same or different binder materials so that different physical characteristics can be obtained at such different regions. Other modifications or extensions of the invention may occur to those in the art within the spirit and scope thereof. Hence, the invention is not to be construed as limited to the specific embodiments described above, except as defined by the appended claims.	6. A process in accordance with claim 5 wherein said porous material is a ceramic, metallic, or plastic material and said further material is an inorganic material, an organic material, or a metallic material.	10	26. A process in accordance with claim 25 wherein each of said one or more jet streams of further material is applied as a continuous jet stream thereof.	5	36. A process in accordance with claim 34 wherein said further material is at least partially hardened by chemical reaction after each layer of further material is applied, and further including the step of supplying a gaseous material to said further material, said further material chemically reacting with said gaseous material to form a partially hardened material.	
What is claimed is:	7. A process in accordance with claim 6 wherein said porous material is a ceramic and said further material is a colloidal suspension of ceramic particles.	15	27. A process in accordance with claim 25 wherein each of said one or more jet streams is applied as a plurality of separate droplets thereof.	10	37. A process in accordance with claims 1 or 5 wherein said material which is removed is removed ultrasonically.	
1. A process for making a component comprising the steps of	8. A process in accordance with claim 5 wherein the porosity of said component is determined in accordance with the packing density of said porous material.	20	28. A process in accordance with claim 27 wherein said separate droplets are applied using continuous jet printing or drop-on-demand jet printing.	10	38. A process in accordance with claims 1 or 5 wherein said further material is applied in a dry state.	
(1) depositing a layer of a powder material in a confined region;	9. A process in accordance with claims 1 or 5 wherein said further material is applied as one or more jet streams thereof.	25	29. A process in accordance with claim 25 wherein said plurality of jet streams are applied in one or more arrays thereof.	15	39. A process in accordance with claim 1 or 5 for making a mold having re-entrant regions and one or more passageways for the admission of molding material into said mold wherein said further material is not applied to said re-entrant regions and unbonded powder material is removed from said re-entrant regions via said passageways.	
(2) applying a further material to one or more selected regions of said layer of powder material which will cause said layer of powder material to become bonded at said one or more selected regions;	10. A process in accordance with claim 9 and further including the step of further processing said bonded material to improve the properties of said component.	30	40. A process in accordance with claim 39 when said powder material is a ceramic powder material for forming a ceramic mold.	15	41. A process in accordance with claim 39 wherein said mold comprises a main body region and one or more core regions, one type of further material being applied to form said main body region and a different type of further material being applied to form said one or more core regions.	
(3) repeating steps (1) and (2) a selected number of times to produce a selected number of successive layers, said further material causing said successive layers to become bonded to each other;	11. A process in accordance with claims 1 or 5 and further including the step of further processing said bonded material to improve the properties of said component.	35	42. A process in accordance with claims 1 or 5 wherein said component is a mold.	15	* * * * *	
(4) removing unbonded powder material which is not at said one or more selected regions to provide the component.	12. A process in accordance with claim 11 wherein said further processing step includes the step of heating said selected number of successive layers of bonded material to further strengthen the bonding of said successive layers of bonded material.	40	35			
2. A process in accordance with claim 1 wherein said powder material includes two different types of powder material.	13. A process in accordance with claim 1 or 5 wherein said material is deposited in a dry state.	45				
3. A process in accordance with claim 1 wherein said powder material is a ceramic, metallic, or plastic material and said further material is an inorganic material, an organic material, or a metallic material.	14. A process in accordance with claim 13 and further including the step of vibrating said dry material to settle said material as said layers thereof are deposited.	50				
4. A process in accordance with claim 1 wherein said powder material is a ceramic and said further material is a colloidal suspension of ceramic particles.	15. A process in accordance with claim 14 wherein said vibrating step is performed by mechanical vibration of said deposited material, by applying acoustic energy to said deposited material, or by applying a piezoelectric scraper device to said deposited material.	55				
5. A process for making a component comprising the steps of	16. A process in accordance with claim 1 or 5 wherein said material is deposited in a liquid vehicle.	60				
(1) depositing in a confined region a layer of a fluent porous material having interconnected porosity;	17. A process in accordance with claim 16 and further including the step of at least partially drying the material before applying said further material.	65				
(2) applying to one or more selected regions of said layer of fluent porous material a further material which will cause said layer of fluent porous material to become bonded at said one or more selected regions;	18. A process in accordance with claim 17 wherein said at least partial drying step is performed by applying infra-red or hot air heat to said deposited layer of material or by applying microwaves to said deposited layer of material.	70				
(3) repeating steps (1) and (2) a selected number of times to produce a selected number of successive layers, said further material causing said successive layers to become bonded to each other;	19. A process in accordance with claims 1 or 5 wherein said further material is applied as a liquid.	75				
20	20. A process in accordance with claim 19 wherein said liquid is an aqueous solution or a gel or a dispersion.	80				
25	21. A process in accordance with claim 19 wherein said liquid comprises binder particles entrained in a carrier liquid.	85				
30	22. A process in accordance with claims 1 or 5 wherein said further material comprises at least two different further materials, said two different further materials being applied to at least two different selected regions of said material.	90				
35	23. A process in accordance with claims 1 or 5 wherein said further material is applied as a single jet stream.	95				
40	24. A process in accordance with claim 23 where each of said one or more jet streams is applied as a plurality of separate droplets thereof.	100				

Provides detailed information about what the inventor is claiming as their own...
 • Language is VERY important.
 • Claims can be dependent on one another.

Claims

- Specific components of the patent that describe the ***scope of the invention.***
- “Moving, interchangeable pieces...”
 - Claims can be:
 - Amended
 - Appended
 - Removed
 - Define the landscape for 3rd party litigation and 1st party patent defense.

Claims Philosophy – Central vs. Peripheral

- **Central**
 - Claims define the “core” or “exact scope” of the invention with a high degree of specificity
 - Used in patent offices in continental EU
- **Peripheral**
 - Claims define the “boundary” or “extent” of the invention
 - Used in US, UK, Japan
 - Easier to determine infringement by 3rd parties

Central vs. Peripheral

Central

- Central focus of patent is well defined
- Scope of invention is determined by specific technology
- “Sphere of influence”
- *Analogy: Castles in the feudal era*



Peripheral

- Boundaries are well defined
- Scope of invention determined by objective means (litigation)
- Power determined by claims, no more, no less
- *Analogy: Rancher's land*

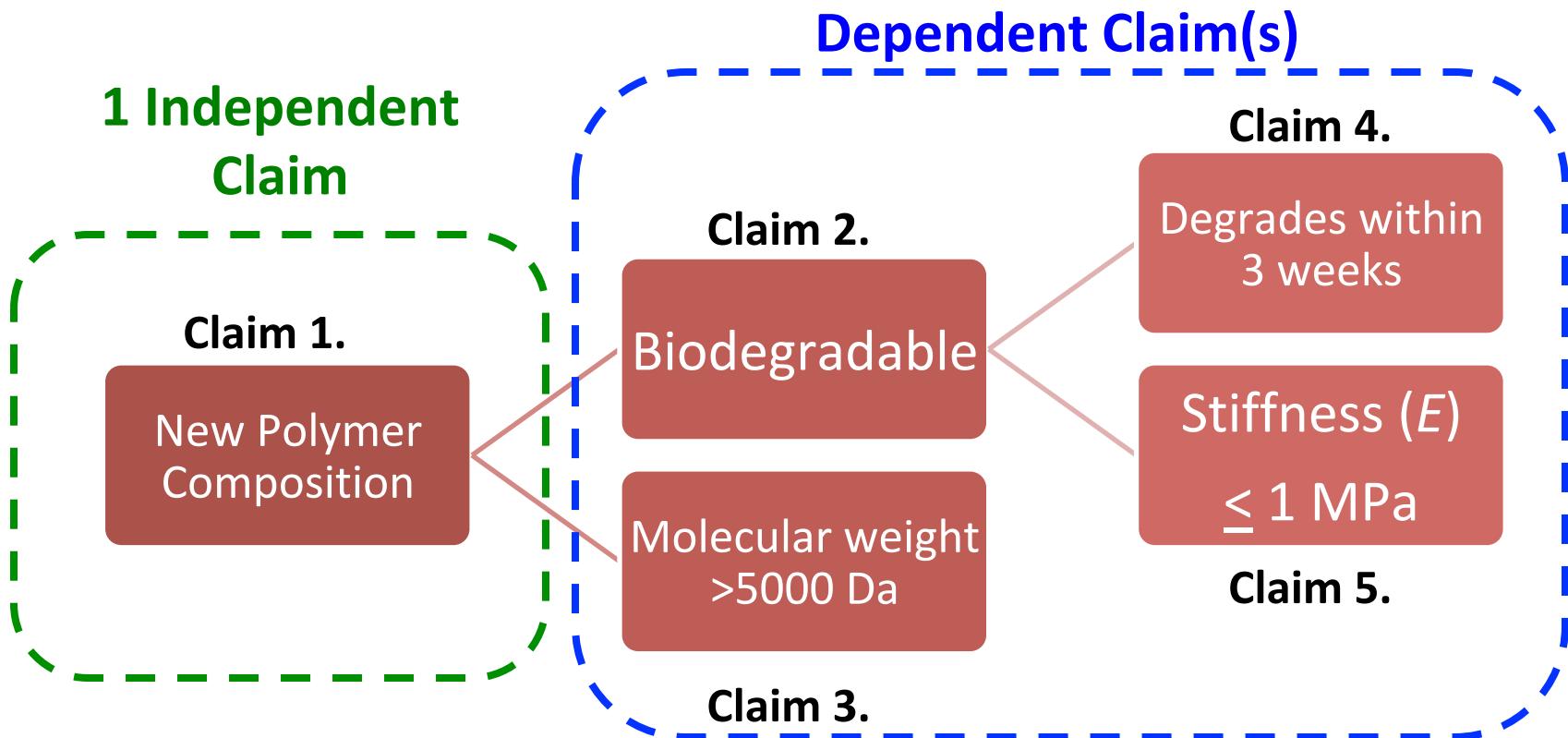


Claims Strategy

- **Breadth vs. Focus**
 - Broader claims are more powerful, but more likely to get thrown out (prior art).
 - More focused claims are more likely to withstand litigation, but may not offer the right level of coverage.
- **Ideal Strategy**
 - Go for the “right level” of protection through claims.
 - Balance risk through claims trees.

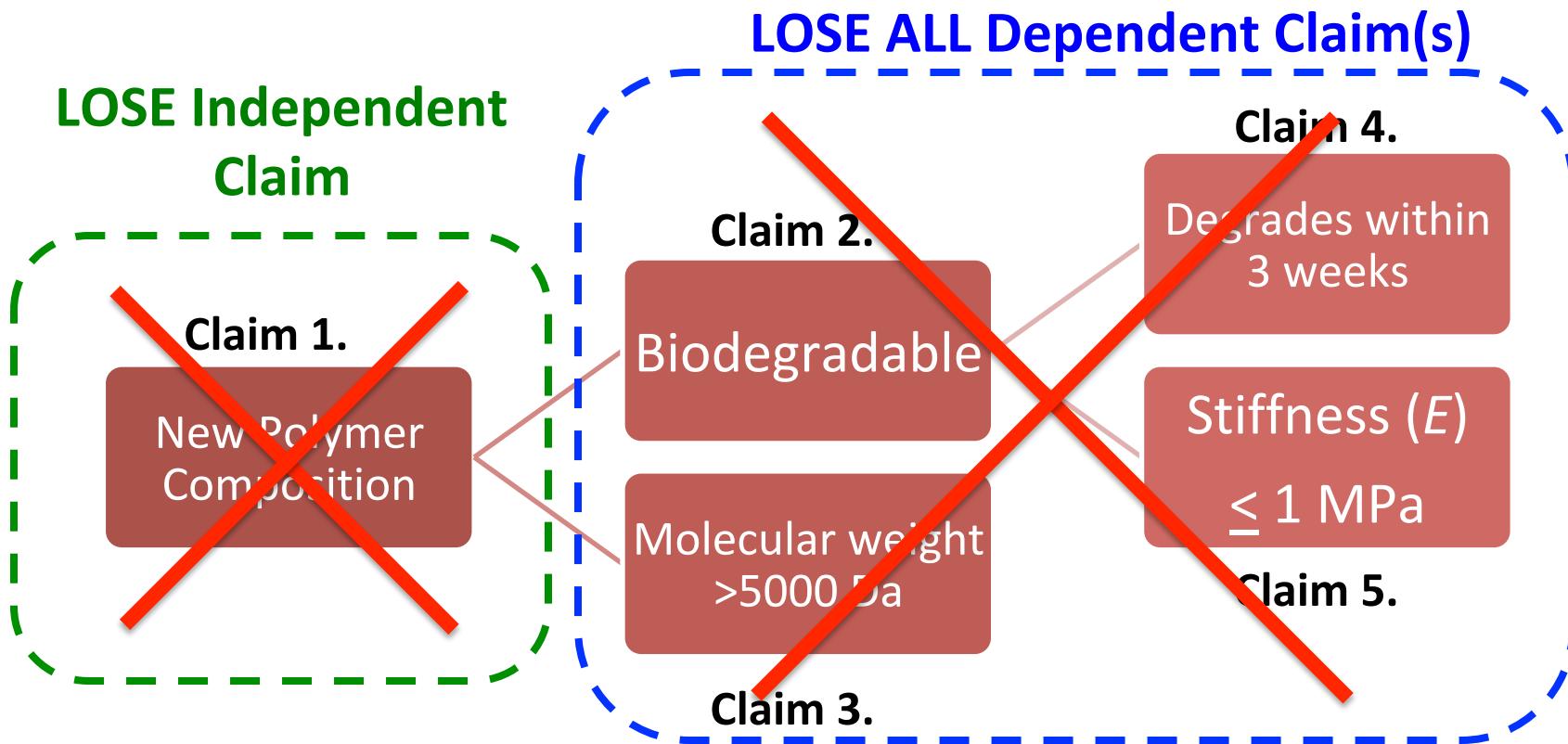
Claims Strategy – Trees

- Properly structured claims trees can offer balance in breadth vs. depth.
- Example of 5 claims structured in a tree.



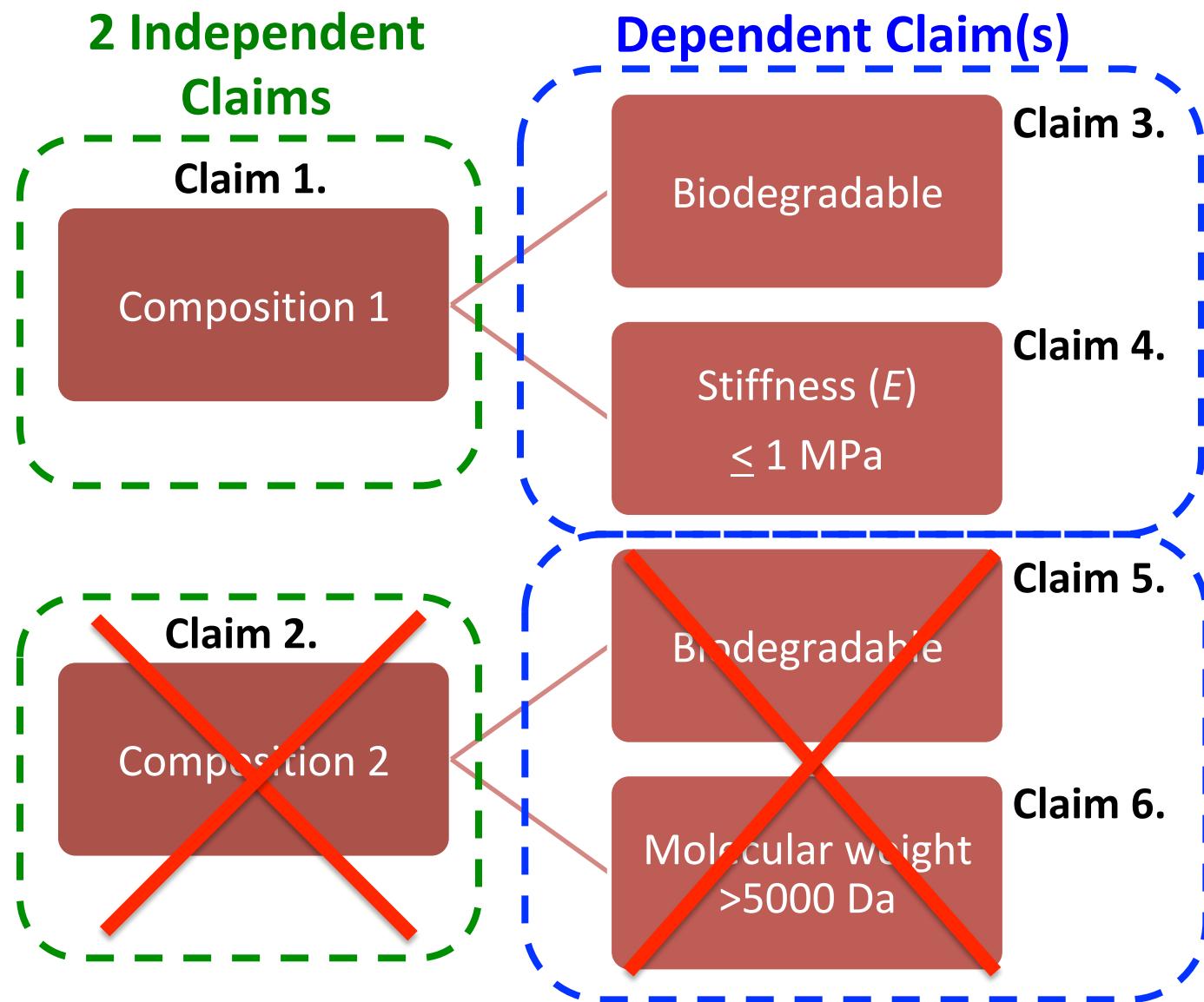
Claims Strategy – Trees (cont.)

- Perhaps polymer composition has been previously synthesized.
- Do you have freedom to operate?
- What are your options?



Claims Strategy – Trees (cont.)

- Potential revised claims tree...



Property analogy when thinking about claims

- Your technology is a house and your claims are the land that your house sits on...



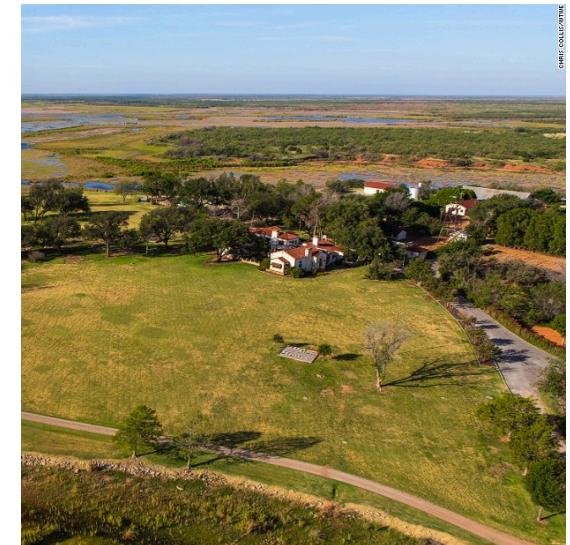
Dense Row House

- Claims describe the technology EXACTLY
- **PRO:** Can likely get narrow claims accepted in a crowded space.
- **CON:** Lose broad coverage.



Suburban House + Yard

- Claims mostly align with the technology
- **PRO:** Broader protection in a crowded space.
- **CON:** Infringement is more possible



Farmhouse + Ranch

- Claims extend well beyond the technology
- **PRO:** Extreme broad protection
- **CON:** Sometimes difficult to enforce (minor).

CHRIS COLEMAN

Definition of Prior Art

- **FORMAL DEFINITION:** **Prior art** is any evidence that your invention is already known. **Prior art** does not need to exist physically or be commercially available. It is enough that someone, somewhere, sometime previously has described or shown or made something that contains a use of technology that is very similar to your invention.
- **LAND GRAB ANALOGY:** You are trying to claim land that has already been utilized by someone else. In effect, you are standing on someone's "intellectual property". Therefore, you cannot stake your own claim to that piece of land.

“Okay, I know what a patent is now, but how do I get a patent?”

- **Step 1. Invent something that is novel, useful, and non-obvious.**
 - Describe it in your lab notebook and make sure you date/sign the initial description (less important these days).
 - Don’t worry too much about doing a deep prior art search. This is the job of lawyers and patent examiners.

“Okay, I know what a patent is now, but how do I get a patent?”

- **Step 2. File a technology disclosure with the CMU CTTEC.**
 - **Cost: \$0 (effectively)**
 - It’s an informal/internal document that helps the CMU CTTEC make a determination if they want to move forward with filing a patent application to the USPTO.
 - Oftentimes, copy/paste of a journal article (with a little more context) is a good starting point for a technology disclosure.
 - **IT IS NOT A LEGAL DOCUMENT AT THIS POINT.**

“Okay, I know what a patent is now, but how do I get a patent?”

- **Step 3. CTTEC files a provisional patent application with the USPTO.**
 - **Cost: About \$100-\$500 (paid by CMU)**
 - If CMU wants to proceed, they will file a provisional patent application.
 - This is a brief technical description of the invention, but does not look like an issued patent (e.g. may not have claims, no abstract, etc.).
 - Many inventions can get to this point with no problem.

“Okay, I know what a patent is now, but how do I get a patent?”

- **Step 4. CTTEC decides to convert the provisional to a non-provisional patent application.**
 - **Cost: >\$5000 (paid by CMU and/or licensee)**
 - You (and CMU) then have one year to decide if you want to convert to a non-provisional patent application.
 - A formal patent application will have claims, which are written by lawyers.
 - The formal patent application will also be evaluated by a patent examiner from the USPTO.
 - Each “office action” = \$\$\$\$\$

“Okay, I know what a patent is now, but how do I get a patent?”

- **Steps 5 thru N. CMU/CTTEC and USPTO debate novelty and obviousness of patent/claims.**
 - **Cost: \$\$\$\$ (paid by CMU and/or licensee)**
 - Examiner will default to the argument that the patent (or specific claims) are not novel and/or that they are obvious.
 - It's up to you and the lawyers to convince them otherwise!
 - As an inventor, knowing something about claims/ IP is critical so that you can help the lawyers.
 - This process can take up to 2 years or longer!

“Okay, I know what a patent is now, but how do I get a patent?”

- **Step N+1. USPTO grants notice of allowance and issues the patent.**
 - **Cost: \$10k or more (paid by CMU and/or licensee)**
 - The lawyers representing CMU/CTTEC will email you letting you know that you have received a NOA.
 - The patent will be issued shortly thereafter.
 - Congratulations! You have just received a US government patent!
 - Be advised that...
 - the patent can always be rescinded or amended upon the discovery of previous unknown prior art.
 - Coverage is only granted in the US.

Summary

- Patents are only one form of intellectual property.
- The system of patenting is ultimately designed as an incentive for innovation.
- Patents are essentially contracts between the US and the inventor.
- Patents are assets that can gain/lose value or be transferred/shared between individuals and organizations.
- The strength of a patent is context-dependent and is a function of the scope of the claims (large intellectual space), but also the ability to protect it (guard your space!).
- Want to craft claims that balance increased scope while reducing interference with prior art.
- Inventions must not overlap or interfere with prior art, which is essentially the sum of all published human knowledge.