# Patentability
# of Circuits and Systems

## IEEE Circuits and Systems Society

### by Steven Rubin

### June 19, 2008

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# Doors for Patentability

1. 101

2. 102

3. 103

4. 112

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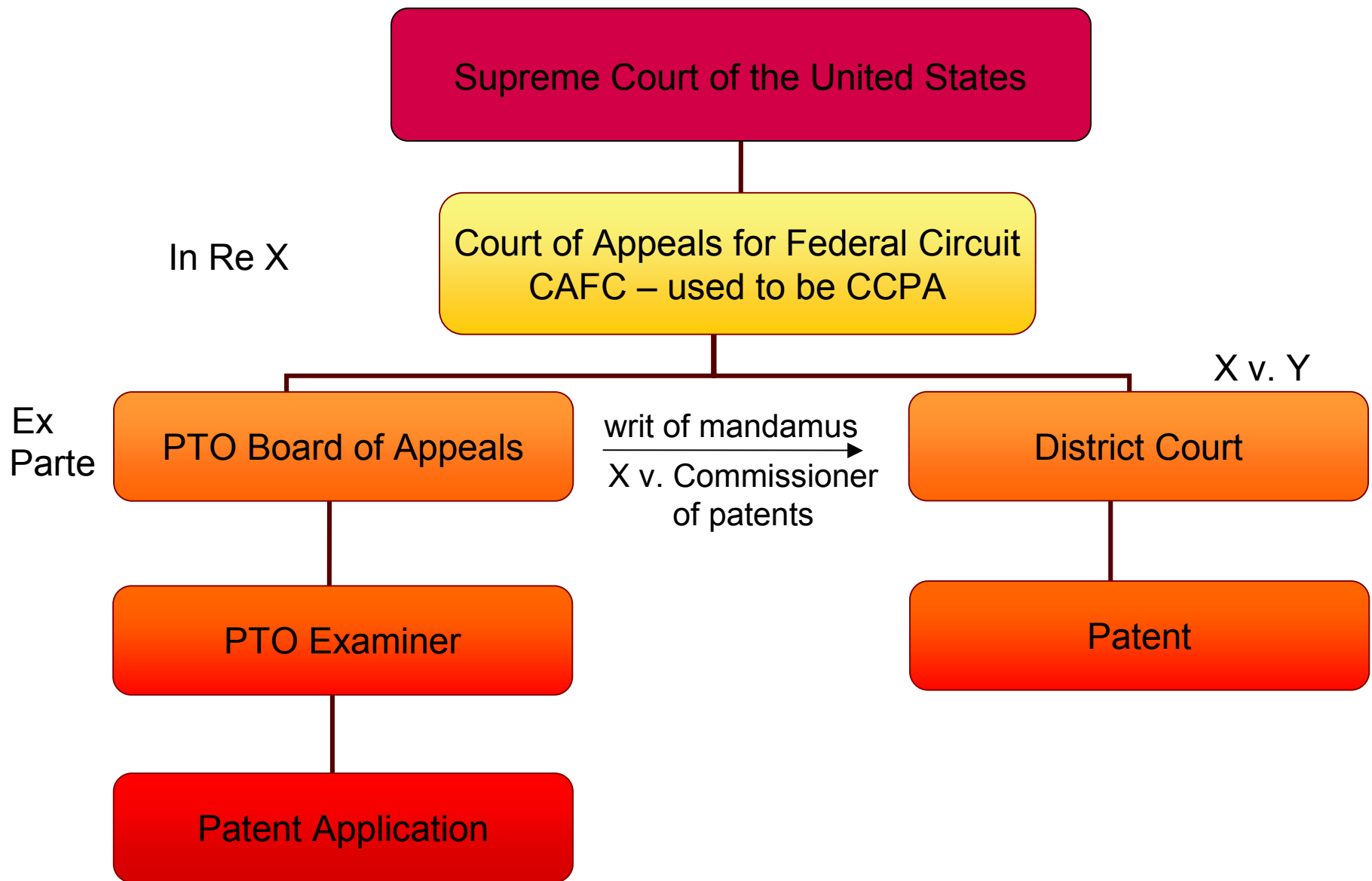
# The Goal



The Congress shall have power . . . to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries. . . .

U.S. Const., Art. I, sec.8

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Supreme Court of the United States

Court of Appeals for Federal Circuit
CAFC – used to be CCPA

In Re X

Ex Parte

PTO Board of Appeals

writ of mandamus
X v. Commissioner of patents

X v. Y

District Court

PTO Examiner

Patent

Patent Application

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101

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# 101

- No laws of nature, natural phenomena or abstract ideas

- F=MA

- Gravity

- Maxwell's equations, but new use

- Anything new under the sun?

# 101
## *Gottschalk v. Benson*
## (U.S. Supreme Court 1972)

- Patent on <u>method</u> for converting BCD numerals to binary numerals – no computer

- 0101 0011 (BCD) →

- 00110101 (binary)



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# 101
## *Gottschalk v. Benson*

- Excluded from patent protection: principle in abstract, phenomena of nature, **mental processes, abstract concepts

- Idea is not patentable

- Process for BCD conversion covers any device, too abstract

- Would effectively pre-empt mathematical formula

- NOT PATENTABLE

- Are programs patentable?  Need more research

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# 101
## *Diamond v. Diehr*
## (U.S. Supreme Court 1981)

- Processes are patentable

- Process that transforms article is patentable

- **Excluded from patent protection:

  - Laws of nature (F=MA, gravity)

  - Natural phenomena

  - Abstract ideas

- Not mathematical formula here, process for curing

- Adding computer to process does not make it un-patentable.

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# 101
## *Diamond v. Diehr*

- **\*\*An application of law of nature or mathematical formula to known structure or process may be patentable**

- Novelty is issue for 35 U.S.C. §102

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# 101
## *Diamond v. Diehr*

- Test: If math is involved in claim, look to see if protection is sought for formula in abstract

- Significant post-solution activity is required

- If article is reduced to different state, likely process is statutory subject matter

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# 101

## State Street Bank & Trust
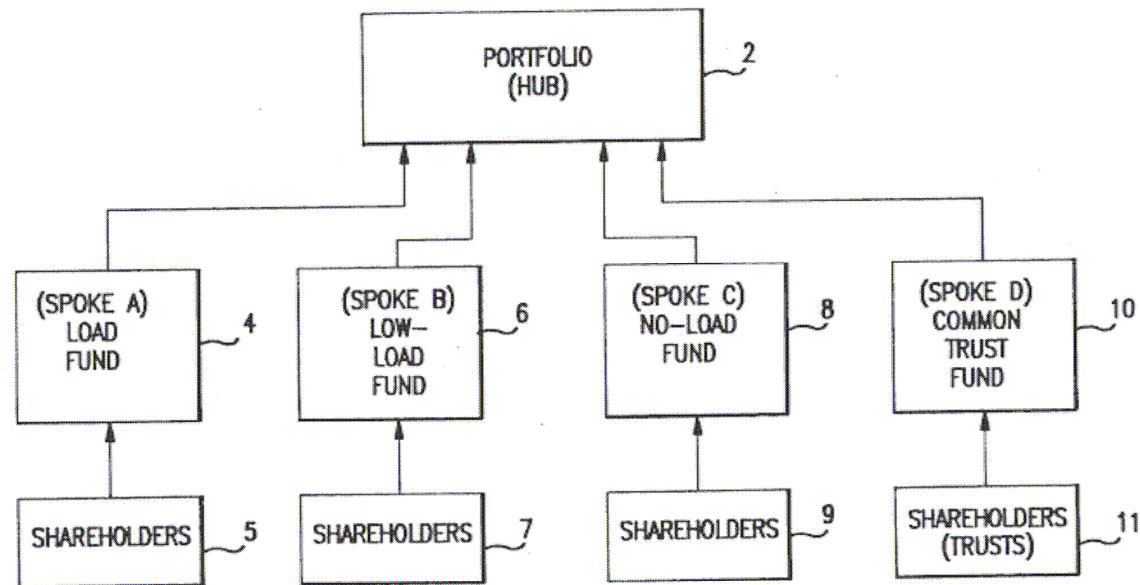## v. Signature Financial
## (Fed. Cir. 1998)



FIG.1

# 101
## *State Street Bank & Trust v. Signature Financial*

- Machine clearly recited

- Patentable subject matter

- **"Anything under the sun that is made by man"

- **Test: Need a "useful, concrete and tangible result"

- Algorithm must be applied in useful way

- Can't preempt mathematical algorithm

- Inputting, calculating, outputting and storing numbers is OK – final share price. Useful result may be number

- ** No business method exception

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# 101

## *AT&T v. Excel Comm.*
## (Fed. Cir. 1999)



FIG. 1

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# 101
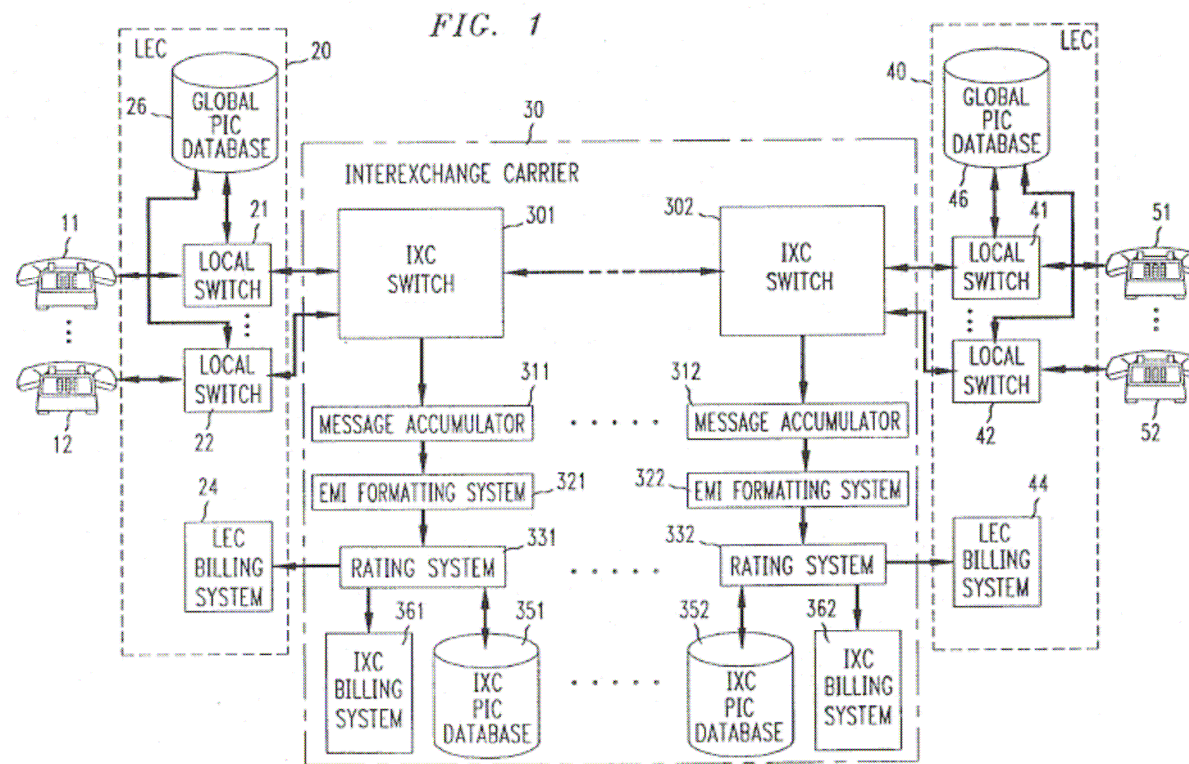
## *AT&T v. Excel Comm.*

A method for use in a telecommunications system in which interexchange calls initiated by each subscriber are automatically routed over the facilities of a particular one of a plurality of interexchange carriers associated with that subscriber, said method comprising the steps of:

generating a message record for an interexchange call between an originating subscriber and a terminating subscriber, and

including, in said message record, a primary interexchange carrier (PIC) indicator having a value which is a function of whether or not the interexchange carrier associated with said terminating subscriber is a predetermined one of said interexchange carriers.

# 101
## *AT&T v. Excel Comm.*

- Anything under the sun made by man

- No laws of nature, natural phenomena, abstract ideas

- Math alone – bad

- But any process includes algorithm

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# 101
## *AT&T v. Excel Comm.*

- A mathematical algorithm that achieves useful, concrete, tangible result is patentable

- Here Boolean principle used for useful, concrete, tangible – so 101

- Physical transformation is example of 101 but not required

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# 101
## *In re Nuijten*
## (Fed. Cir. Sept. 2007)

- Is signal patentable?

- Claim to change signal to compensate for watermark

- Transitory embodiments are not statutory subject matter

- Must be one of four statutory categories: process, machine, manufacture, composition of matter

    1) Process – requires action

    2) Machine – concrete thing consisting of parts

    3) Manufacture – produce tangible article with new quality, semblance of permanence

    4) Composition of matter – 2 or more substances

- Not Patentable

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# 101
## *In re Comiskey*
## (Fed. Cir. Sept. 2007)
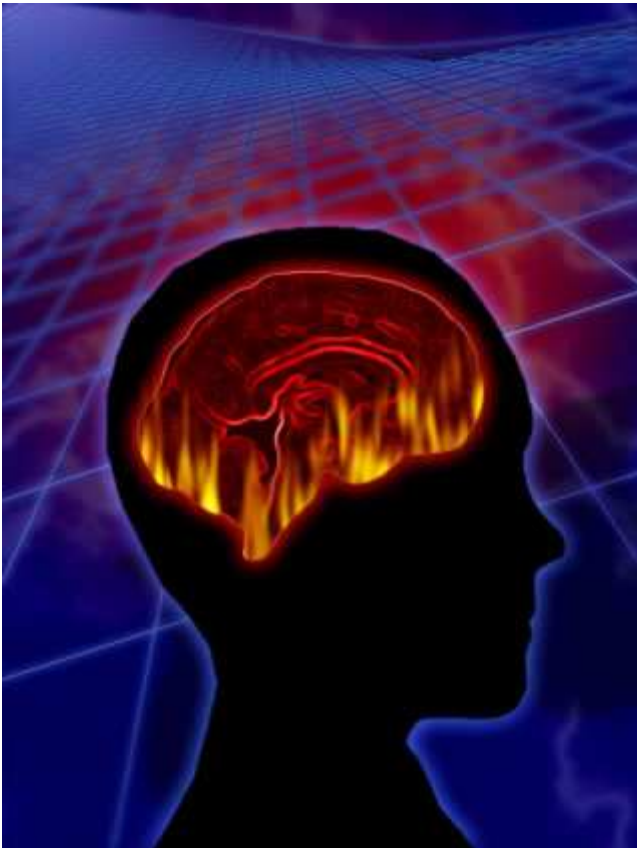


- Mental processes? Method for arbitration

- Patent on process must include, be embodied in, operate on or transform another statutory class: machine, manufacture or composition of matter

- Mental processes not patentable

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# 101
## *In re Comiskey*

- A system that operates on human intelligence alone is not patentable

- Adding network or computer would make claim patentable

- So, combine process with machine

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# 101
## Ex Parte *Bilski*
## *(BPAI 2006)*

A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:

(a)     Initiating a series of transactions between said commodity provider and consumers of said commodity where said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;

(b)     Identifying market participants for said commodity having a counter-risk position to said consumers; and

(c)     Initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

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# 101
## Ex Parte *Bilski*

- No "technical arts" based rejections

- Non-machine implemented methods because they are abstract, present 101 issues

- *State Street* and *AT&T* including transformation of data by machine and LIMITED TO machine implemented processes

- Not every "process" under the sun is patentable (e.g., negotiating contract, convening meeting – not patentable)

- Laws of nature, natural phenomena – not made by man, they are discoveries and so not patentable

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# 101
## Ex Parte *Bilski*

- Some tests for not statutory because abstract idea:

  - No transformation of any physical subject matter

  - Claims covers every possible way that steps may be performed

- If transformation, no physical apparatus needed, could even be performed by a human

- Here, nothing transformed and no computer. Abstract idea, not practical implementation

- **Transformation of physical subject matter needed

- Useful, concrete, tangible test not applicable here

- NOT PATENTABLE

- ON APPEAL BEFORE FED CIR

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# *In re Bilski*
# (Fed. Cir. 2008???)

Court had en banc hearing (May 2008) and supplemental briefs on the following questions:

1) Whether claim 1 of the 08/833,892 patent application claims patent-eligible subject matter under 35 U.S.C. § 101?

2) What standard should govern in determining whether a process is patent-eligible subject matter under section 101?

3) Whether the claimed subject matter is not patent-eligible because it constitutes an abstract idea or mental process; when does a claim that constitutes both mental and physical steps create patent-eligible subject matter?

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# *In re Bilski*

4) Whether a method or process must result in a physical transformation of an article or be tied to a machine to be patent-eligible subject matter under section 101?

5) Whether it is appropriate to reconsider *State Street Bank & Trust Co. v Signature Financial Group, Inc.,* 149 F.3d 1368 (Fed. Cir. 1998), and *AT&T Corp. v. Excel Communications, Inc.,* 172 F.3d 1352 (Fed. Cir. 1999), in this case and, if so, whether those cases should be overruled in any respect?

STAY TUNED…

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102

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# 102
## *Amazon.com v. Barnesandnoble.com*
## (W.D. WA. 1999)



Fig. 2
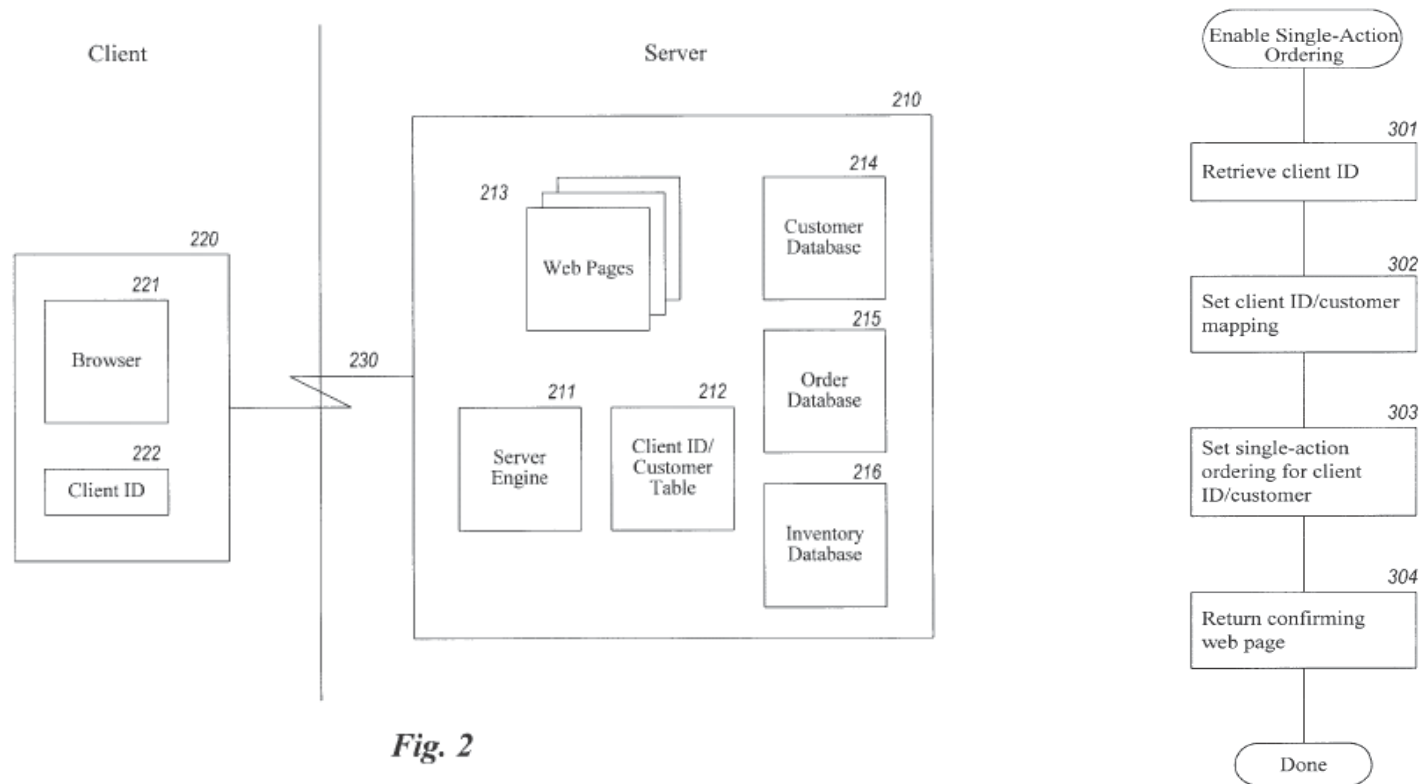
# 102
## *Amazon.com v. Barnesandnoble.com*

- Court looked at: Web Basket, Netscape Merchant System, Oliver's Market, etc.

- All prior art required multiple steps such as:

  (1) Put item in cart

  (2) Send information to merchant's computer

  (3) Checkout review

- No anticipation

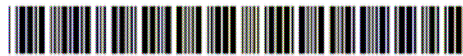**WolfBlock**

103

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# 103
## *KSR v. Teleflex*
## (U.S. Supreme Court 2007)

- Not explicitly shown in 1 reference

- Chocolate, peanut butter

- Any new circuit – see circuit textbook, inductors, capacitors, etc.

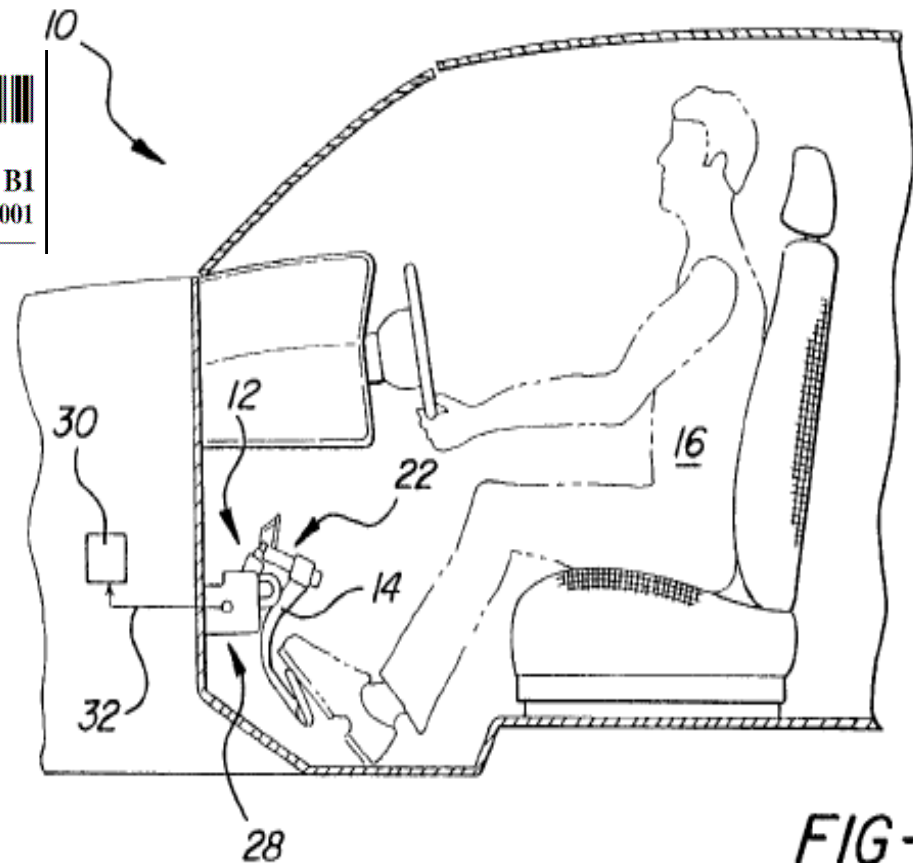- What test does one use when faced with multiple references?

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# 103
## *KSR v. Teleflex*



US006237565B1

(12) **United States Patent**
Engelgau

(10) Patent No.: US 6,237,565 B1
(45) Date of Patent: *May 29, 2001

FIG-1

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# 103
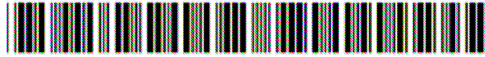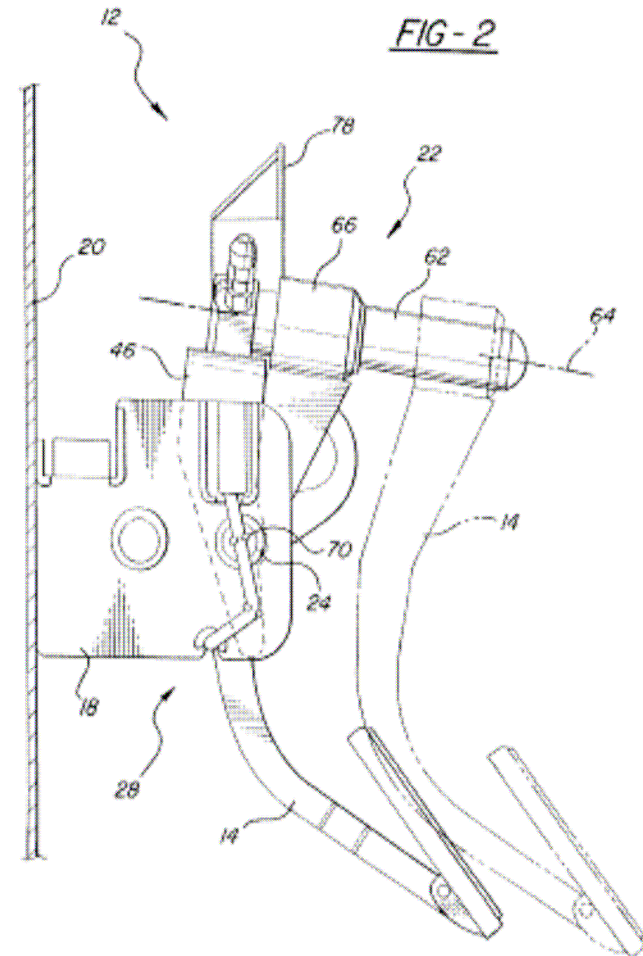## *KSR v. Teleflex*



(barcode) US006237565B1

(12) **United States Patent**
Engelgau

(10) Patent No.: **US 6,237,565 B1**
(45) Date of Patent: *May 29, 2001

FIG - 2

# 103
## *KSR v. Teleflex*

(12) **United States Patent**                    (10) Patent No.:     US 6,237,565 B1
Engelgau                                          (45) Date of Patent:     *May 29, 2001

US006237565B1

Claim 4

- Adjustable pedal sensor in assembly

- Electronic throttle control

- On support

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# 103
## *KSR v. Teleflex*

Supreme Court

- Scope and content of prior art

- Differences between prior art and claims

- Level of skill of POSA

- Secondary considerations

  ➢ Commercial success, long felt unresolved need, failure of others

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# 103
## *KSR v. Teleflex*

Supreme Court

- Use "expansive and flexible approach"

- The test: Is there apparent reason to combine known elements in fashion claimed by patent at issue?

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# 103
## *KSR v. Teleflex*

## Supreme Court

- Things to consider:

  ➢ Patent for combination that only unites old elements *with no change in their respective functions* is obvious

  ➢ Design incentives

  ➢ Market forces

  ➢ Interrelated teachings of multiple patents

  ➢ Precise teaching not required

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# 103
## *KSR v. Teleflex*

➢ Not to advances "without real innovation, ordinary innovation not enough"

➢ Known problem may produce obvious solution

➢ Any need or problem in field of endeavor

➢ Look at "common sense" – bad facts?

➢ POSA has ordinary creativity

➢ Obvious to try

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# 103
## *KSR v. Teleflex*

- Patent filing strategy

  ➢ Less filings?

  ➢ Prior art search?

  ➢ Background description, avoid marketplace incentives

  ➢ Supporting affidavits

- Litigation strategy

  ➢ Careful when characterizing POSA

  ➢ Presumption of validity?

- Due diligence in technology transfer

  ➢ Market research re marketplace motivators?

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# 103

## *Leapfrog Enterprises v. Fisher-Price, Inc.* (Fed. Cir. 2007)

## Federal Circuit

- Electronic device for associating letters with their sounds

- Updating mechanical prior art device with electronics – commonplace and obvious, common sense

- Old idea using new technology – available and understood in the art

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112

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# 112

- Written Description

  - Prove inventor had possession of invention

  - Rarely issue in electrical, computer science arts

- Enablement

  - Describe invention so that one with ordinary skill in the art can practice without undue experimentation

- Best Mode

  - Describe best way known by inventor for practicing invention

- Claims

  - Define metes and bounds of invention

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# 112
## *Lizardtech, Inc. v. Earth Resource Mapping, Inc.*
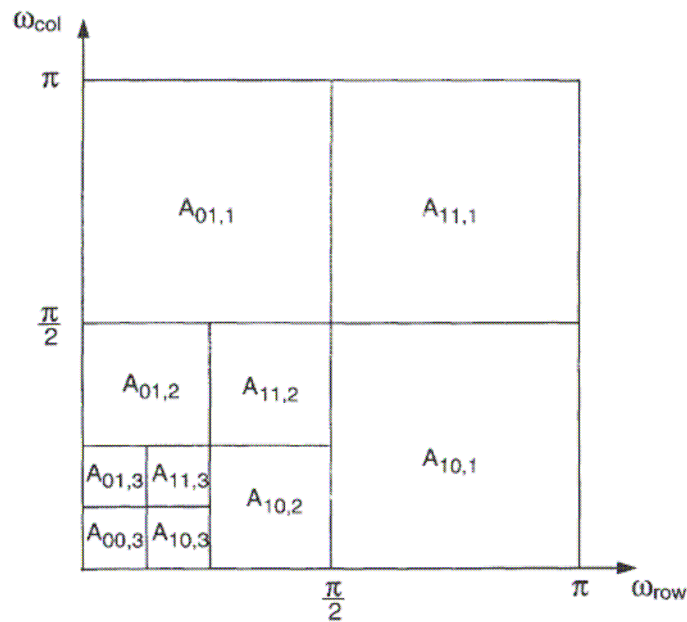## (Fed. Cir. 2005)



Fig. 4



Fig. 5

# 112

## *Lizardtech, Inc. v. Earth Resource Mapping, Inc.*

- Specification discussed only single way of making seamless DWT – by maintaining updated sums

- Issued claim 21 referred to taking DWT generically – without requiring updated sums

- As only single way for creating DWT was disclosed, claim to generically making DWT was not supported

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# 112

## *Lizardtech, Inc. v. Earth Resource Mapping, Inc.*

- Here, either written description or enablement not satisfied

- After reading specification, POSA would not be able to make seamless DWT generically as stated in claim 21

- Claim scope cannot be so broad as to entitle inventor to more than what person of skill in the art would understand the inventor possessed or what person of skill in the art would be enabled to make and use

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# 112

## *Lizardtech, Inc. v. Earth Resource Mapping, Inc.*

- Analogy – patent describes fuel-efficient vehicle. Claims could not cover every type of fuel-efficient vehicle regardless of their construction

- Description for one method for creating seamless DWT does not cover any and all means for achieving that objective

- Claim INVALID

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# 112

## *Sitrick v. Dreamworks*
## (Fed. Cir. Feb. 2008)
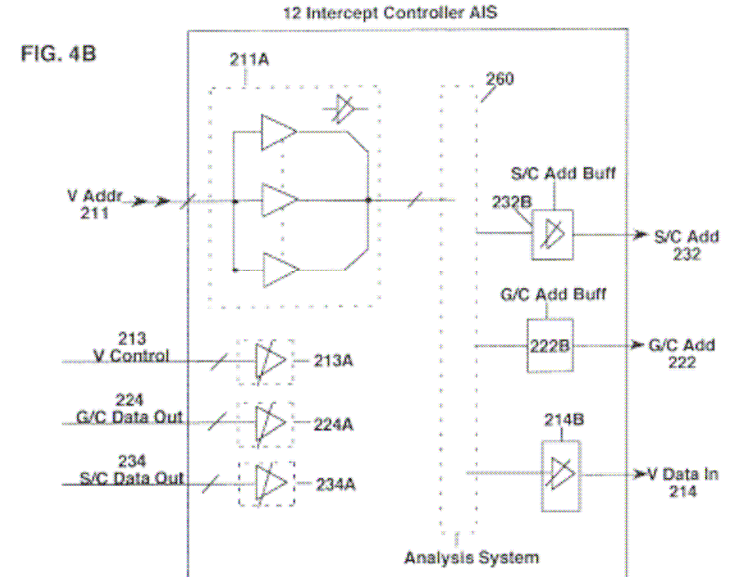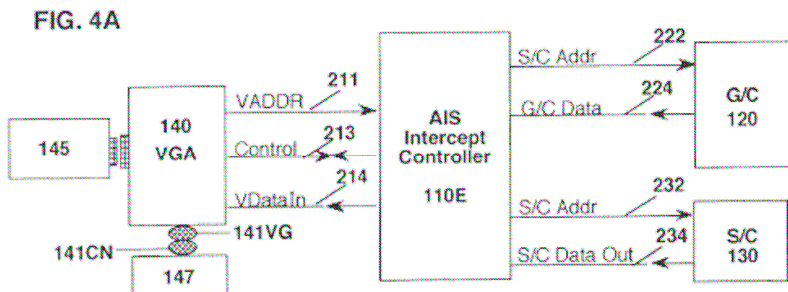
# 112
## *Sitrick v. Dreamworks*

- As claims covered movies, specification must enable movies

- Movies do not have same easily separable character functions as video games and so interception of signals could not be practiced in same way

- NOT ENABLED – INVALID

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# 112

- Claims
  - ➢ Define scope
  - ➢ Means plus function

- 35 U.S.C. 112, 6

- An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to **cover the corresponding structure**, material, or acts described in the specification and equivalents thereof.

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# 112, 6

- Originally thought to be broad, only covers corresponding structure

- Generally broader coverage if structure claimed

  - e.g., "a light"

    is broader than

    "means for illuminating"

- Specification must link structure with function

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# 112, 6

- What is means plus function?

  ➢ Does structural element recite function?

  ➢ Does claim element use word "means?"

  ➢ Is there sufficient structure in claim to achieve recited function?

  ➢ Is claim element referred to by terms that have reasonably well-known meaning in art?

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# 112, 6

*Aristocrat Technologies v. International Game Technology*
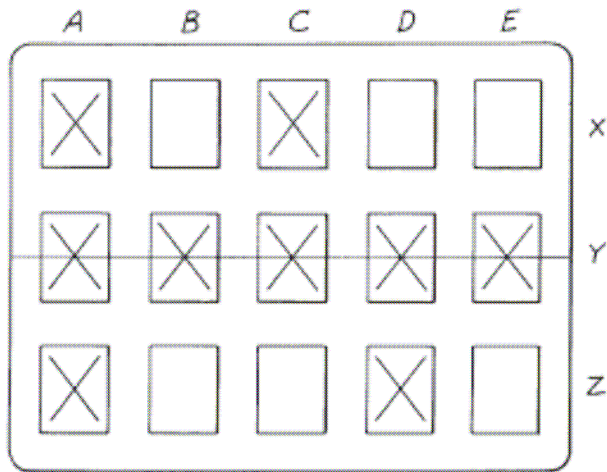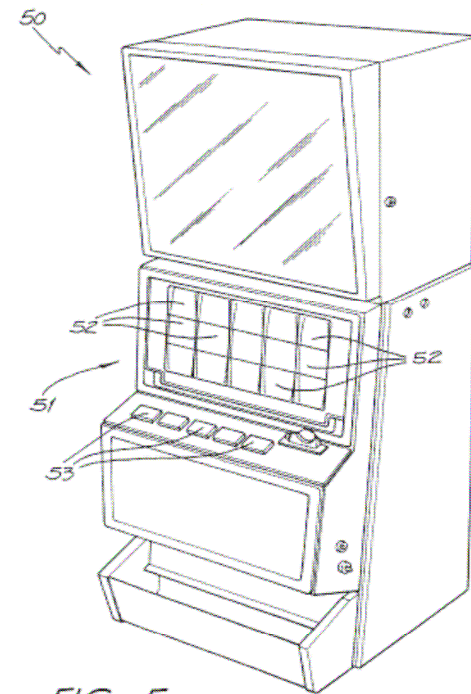
**(Fed. Cir. March 2008)**


FIG. 1


FIG. 5

# 112, 6

## *Aristocrat Technologies v. International Game Technology*

1.A gaming machine

having display means arranged to display a plurality of symbols in a display format having an array of n rows and m columns of symbol positions,

*game control means* arranged to control images displayed on the display means, the **game control means** being arranged to pay a prize when a predetermined combination of symbols is displayed in a predetermined arrangement of symbol positions selected by a player, playing a game, including one and only one symbol position in each column of the array,

the gaming machine being characterised in that

selection means are provided to enable the player to control a definition of one or more predetermined arrangements by selecting one or more of the symbol positions and

## *Aristocrat Technologies v. International Game Technology*

the ***control means*** defining a set of predetermined arrangements for a current game comprising each possible combination of the symbol positions selected by the player which have one and only one symbol position in each column of the display means,

wherein the number of said predetermined arrangements for any one game is a value which is the product k.sub.1 . . . .times. . . . k.sub.i . . . .times. . . . k.sub.m where k.sub.i is a number of symbol positions which have been selected by the player in an i.sup.th column of the n rows by m columns of symbol positions on the display (0<i.ltoreq.m and k.sub.i .ltoreq.n).

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# 112, 6
## *Aristocrat Technologies v. International Game Technology*

- Parties agreed "game control means" 112, 6

- Is general purpose microprocessor sufficient structure for 112, 6?

- No

- More structure needed, otherwise purely functional (unbounded) claiming

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# 112, 6
## *Aristocrat Technologies v. International Game Technology*

- Algorithm changes general purpose computer into special purpose computer

- If structure is a processor to perform an algorithm, it is special purpose computer programmed to perform the algorithm

- Structure in the specification is an algorithm


- Here, no algorithm stated

- A listing that said when symbols are displayed, pay a particular prize is ***not an algorithm, but a function*** to be performed.

- It is irrelevant whether one skilled in the art could make algorithm – that's enablement. If any algorithm was disclosed, then POSA would be used to determine if sufficient.

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# 112, 6
## *Aristocrat Technologies v. International Game Technology*

- Equation is not enough because it describes outcome, not means for achieving outcome (algorithm)

- Source code not needed

- Disclose an algorithm or flow chart

- Invalid under 35 U.S.C. §112, 2

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# What is patentable?

- 101: Statutory subject matter: Anything new under the sun?

- 102: Novelty (one reference)

- 103: Non-obviousness (multiple references): Motivation to combine

- 112: Writing requirements

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# Thank you

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