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PATENT PROTECTION FOR HIGH TECHNOLOGY

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PATENT PROTECTION FOR HIGH TECHNOLOGY

Functional Claiming

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Morse patent (USRE117, published June 13, 1848) claim 8:

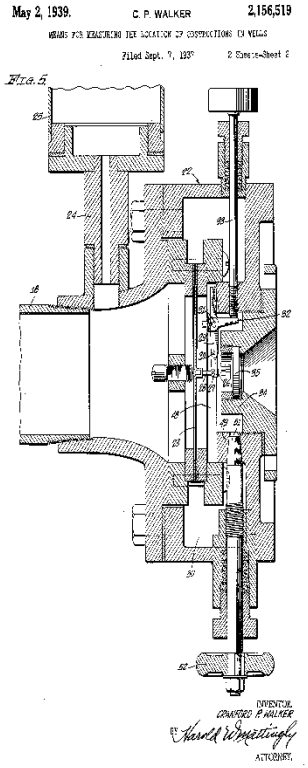
"Eighth. I do not propose to limit myself to the specific machinery or parts of machinery described in the foregoing specification and claims; the essence of my invention being the use of the motive power of the electric or galvanic current, which I call electro-magnetism, however developed for marking or printing intelligible characters, signs, or letters, at any distances, being a new application of that power of which I claim to be the first inventor or discoverer."

O'Reilly v. Morse, 56 US 62 (1853)

"That is to say he claims a patent for an effect produced by the use of electro-magnetism distinct, from the process or machinery necessary to produce it. The words of the acts of Congress above quoted show that no patent can lawfully issue upon such a claim. For he claims what he has not described in the manner required by law. And a patent for such a claim is as strongly forbidden by the act of Congress as if some other person had invented it before him."

Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1, 12-13 (1946)

"Had Walker accurately described the machine he claims to have invented, he would have had no such broad rights to bar the use of all devices now or hereafter known which could accent waves. Certainly, if we are to be consistent with Rev. Stat. § 4888, a patentee cannot obtain greater coverage by failing to describe his invention than by describing it as the statute commands."



35 U.S.C. § 112, ¶3 (now 35 U.S.C. § 112(6)) enacted after *Halliburton*:

In place of the *Halliburton* rule, Congress adopted a compromise solution, one that had support in the pre-*Halliburton* case law: Congress permitted the use of purely functional language in claims, but it limited the breadth of such claim language by restricting its scope to the structure disclosed in the specification and equivalents thereof.

***Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580 (Fed. Cir. 1996)**

35 U.S.C. §112(f) (formerly 112(6))

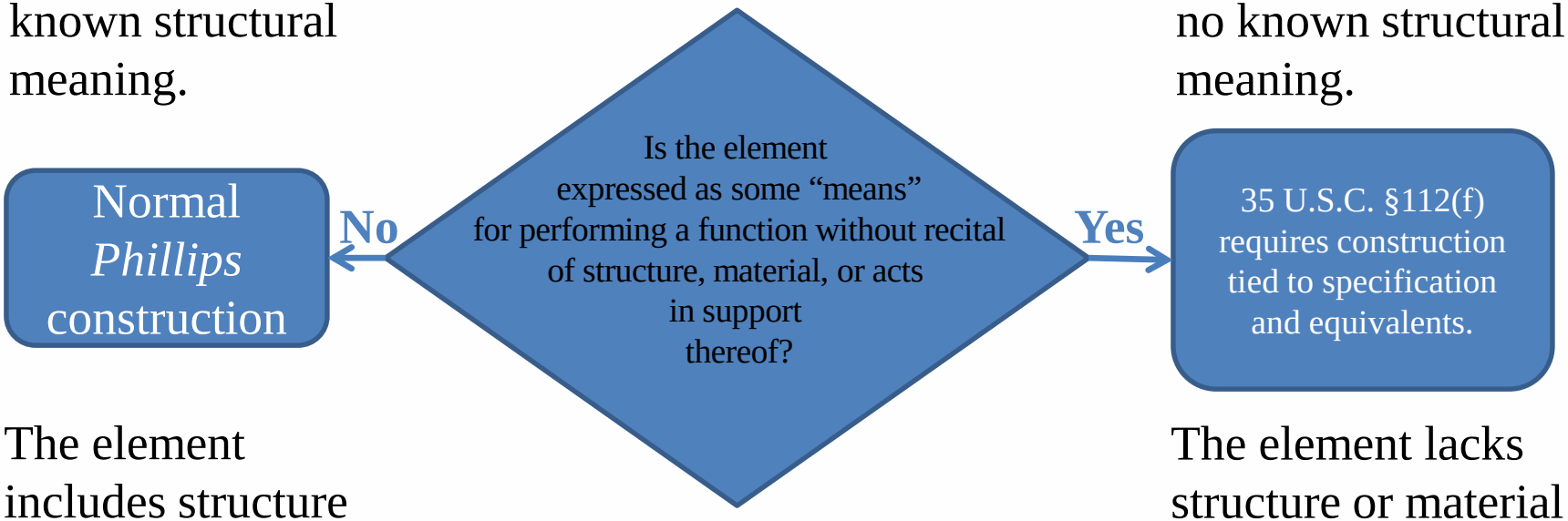
- *ELEMENT IN CLAIM FOR A COMBINATION.—An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.*
- 35 U.S.C. §112(f) permits use of means-plus-function claiming of *combinations*. A single element means-plus-function claim is not permitted.

Means-plus-function was popular for a while after 1952 Patent Act

- Inventors thought any means of performing a function would be covered and claimed accordingly
- *In re Donaldson* (1994) means plus function limitations were limited to the means identified in the specification and their equivalents
- This is what the statute said in the first place but *In re Donaldson* repeated it

The element has a known structural meaning.

The element has no known structural meaning.



The element includes structure or material to perform the function

The element lacks structure or material to perform the function

Examiner Training*

Examiners underwent training on 112(f), 112(b):

- Module 1: Identifying § 112(f) limitations
  - Recognizing § 112(f) limitations that do not use classic "means for" phrasing
  - Interpreting "generic placeholders" that serve as substitutes for means (e.g., unit, mechanism)
- Module 2: Clarifying the record to place remarks in the file regarding when § 112(f) is, or is not, invoked
  - Establishing presumptions based on use of "means"
  - Providing explanatory remarks when presumptions are rebutted

- *available on USPTO website
  - http://www.uspto.gov/video/cbt/BRI/
  - http://www.uspto.gov/video/cbt/sftwrevaluate/index.htm
  - http://www.uspto.gov/video/cbt/identify-limit/index.htm
  - http://www.uspto.gov/video/cbt/make-record/index.htm

Examiner Training (cont'd)

<u>Module 3:</u> Interpretation and definiteness of 35 U.S.C. § 112(f) limitations

- How to interpret § 112(f) limitations under the broadest reasonable interpretation (BRI) standard
- Evaluating equivalents
- Determining whether a § 112(f) limitation is definite under § 112(b)

<u>Module 4:</u> Computer-implemented (software) § 112(f) limitations

- Determining whether a sufficient algorithm is provided to support a software function

MPEP 2181: § 112(f) Claims Must Satisfy § 112(b)

- 112(f) states that a claim limitation expressed in means-plus-function language "shall be construed to cover the corresponding structure…described in the specification and equivalents thereof."
- "If one employs means plus function language in a claim, **one must set forth in the specification an adequate disclosure showing what is meant by that language**. If an applicant fails to set forth an adequate disclosure, the applicant has in effect failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112."

How Does the USPTO Construe § 112(f)?

MPEP

- § 2111.01: Plain Meaning: When an element is claimed using language falling under the scope of 35 U.S.C. 112, 6th paragraph . . . the specification must be consulted to determine the structure, material, or acts corresponding to the function recited in the claim.
- § 2114: It should be noted, however, that means plus function limitations are met by structures which are equivalent to the corresponding structures recited in the specification.

MPEP 2181: How to Satisfy § 112(b)

The proper test for meeting the definiteness requirement is that the corresponding structure (or material or acts) of a means (or step)-plus function limitation must be disclosed in the specification itself in a way that one skilled in the art will understand what structure (or material or acts) will perform the recited function.

Module 4: Evaluating § 112(f) Limitations in Software-Related Claims for Definiteness

Programmed computer functions require a computer programmed with an "algorithm" to perform the function

- An algorithm is a step-by-step procedure for accomplishing a given result
- Can be expressed in various ways "in any understandable terms including as a mathematical formula, in prose or as a flow chart, or in any other manner that provides sufficient structure" (*Finisar*)
- Amount of disclosure of an algorithm is analyzed on a case-by-case basis

Module 4: Evaluating § 112(f) Limitations in Software-Related Claims for Definiteness

Two types of computer-implemented functions:

- Specialized functions: functions other than those commonly known in the art, often described by courts as requiring "special programming" for a general purpose computer or computer component to perform the function
  - *Ex. means for matching incoming orders with inventory on a pro rata basis*
- Non-specialized functions: functions known by those of ordinary skill in the art as being commonly performed by a general purpose computer or computer component
  - *Ex. means for storing data*

Module 4: Evaluating § 112(f) Limitations in Software-Related Claims for Definiteness

The corresponding structure in the specification that supports a § 112(f) limitation that recites a specialized function is:

- A general purpose computer or computer component **along with the *algorithm*** that the computer uses to perform the claimed specialized function
  - The disclosure requirement under § 112(f) is not satisfied by stating that one of ordinary skill in the art *could* devise an algorithm to perform the specialized programmed function

Module 4: Evaluating § 112(f) Limitations in Software-Related Claims for Definiteness

A specialized function must be supported in the specification by the computer or computer component and the algorithm that the computer uses to perform the claimed specialized function

- The **default rule** for § 112(f) programmed computer claim limitations is to require disclosure of an algorithm when special programming is needed to perform the claimed function
- Disclosure of the step by step procedure for specialized functions establishes clear, definite boundaries and notifies the public of the claim scope
- "Claiming a processor to perform a specialized function without disclosing the internal structure of the processor ***in the form of an algorithm***, results in claims that exhibit the 'overbreadth inherent in open-ended functional claims'" (*Halliburton Energy Services* (emphasis added))

Williamson v. Citrix Online, LLC, 792 F.3d 1339 (Fed. Cir. 2015) (*en banc*)

Claim 8. A system for conducting distributed learning among a plurality of computer systems coupled to a network, the system comprising:

…

a distributed learning control module for receiving communications a distributed learning control module for receiving communications transmitted between the presenter and the audience member computer systems and for relaying the communications to an intended receiving computer system and for coordinating the operation of the streaming data module

Williamson (cont'd)

District Court: Invalid for Indefiniteness.

- "Distributed learning control module," was a means-plus-function term.
- Specification failed to disclose the necessary algorithms for performing all of the claimed functions.
- Federal Circuit: Affirmed.
- "To determine whether § 112, para. 6 applies to a claim limitation, our precedent has long recognized the importance of the presence or absence of the word "means." …the use of the word "means" in a claim element creates a rebuttable presumption that § 112, para. 6 applies.

Williamson (cont'd)

Federal Circuit Quotes:

- Claim "replaces the term 'means' with the term 'module' and recites three functions performed by the 'distributed learning control module.'"
- 'Module' is a well-known nonce word that can operate as a substitute for 'means' in the context of § 112, para. 6. …Here, the word 'module' does not provide any indication of structure because it sets forth the same black box recitation of structure for providing the same specified function as if the term 'means' had been used.
- Prefix 'distributed learning control' does not impart structure into the term 'module,' nor does written description impart any structural significance to the term.

Williamson (cont'd)

- "Where there are multiple claimed functions, the patentee must disclose adequate corresponding structure to perform all of the claimed functions."
- "Structure disclosed in the specification qualifies as "corresponding structure" if the intrinsic evidence clearly links or associates that structure to the function recited in the claim."
- "Even if the specification discloses corresponding structure, the disclosure must be of "adequate" corresponding structure to achieve the claimed function."

Williamson (cont'd)

- If a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim, a means-plus-function clause is indefinite."
- "The specification does not set forth an algorithm for performing the claimed functions."
- Newman dissent – adds uncertainty

Nonce Words

Mystery List A:

- – mechanism for
- – module for
- – device for
- – unit for
- – component for
- – element for
- – member for
- – apparatus for
- – machine for
- – system for

Mystery List B:

- Circuit for
- Detent mechanism
- Digital detector for
- Reciprocating member
- Connector assembly
- Perforation
- Sealingly connected joints
- Eyeglass hanger member

Nonce Words (cont'd)

Nonce words (invoke paragraph 6) as listed in MPEP 2181:

- – mechanism for
- – module for
- – device for
- – unit for
- – component for
- – element for
- – member for
- – apparatus for
- – machine for
- – system for

The following terms have been held not to invoke paragraph 6 (as listed in MPEP 2181) :

- Circuit for
- Detent mechanism
- Digital detector for
- Reciprocating member
- Connector assembly
- Perforation
- Sealingly connected joints
- Eyeglass hanger member

Post-*Williamson*

Farstone v. Apple:

- Circuit court - “processing system” construed as computer equipment with hardware resource containing a “backup/recovery module” and “recovery unit”

- *Media Rights v. Capital One*:
  - “compliance mechanism” does not suggest structure
  - Not a substitute term for a circuit (which would have been sufficient structure) at least because no inputs and outputs were claimed
- *Collaborative Agreements v. Adobe*:
  - “code segment” suggests structure
- *SyncPoint Imaging*:
  - “processor” does not invoke 112(f)
- *Advanced Ground Info*:
  - “symbol generator” analogous to “means for generating symbols”

Stories From a Grunt from the Front:

- “security system control panel” a nonce term?
- Prosecution as seen first-hand

More Tips on Indefiniteness

Standards for corresponding structure

- Structure is corresponding structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim
- Also needs to enable recited function
  - *Noah Systems* - example of where there was a software algorithm disclosed and linked but there wasn't sufficient disclosure of the algorithm to enable the recited function
- if you are trying to cover all possible approaches to achieving a particular function, you may not have sufficient disclosure.
  - Consider narrow and broad algorithms

More Tips on Indefiniteness

Standards for corresponding structure (cont'd)

- Disclose where the functions take place
  - *Alfred Mann v. Cochlear Corporation* – disclose where functions take place – not sufficient to argue that functions must be performed in microprocessor
- Consider providing example SQL queries when a search is performed (or state what tables are used, etc.)
  - *Tele-Publishing v. Facebook*– "means for searching" - algorithm accessed a database and performed a query. Court said this was a circular definition of "searching"

Practical Tips in Drafting

- Disclosure should show how a computer would perform each function claimed (for computer-implemented claims)
- Detailed flow chart, even in non-software specifications
- Disclose as many embodiments, variants and equivalents as possible for the invention
- Include inputs and outputs for each structure in your claim
- Include structure in claim (if you do not intend 112(6) treatment)
  - Description of memory, ports, etc.
  - However you may want to take advantage of doctrine of equivalents by providing equivalents in the specification

No need to avoid functional claiming. Functional claiming allows the drafter to control the scope of the claim (through the specification).

- Functional claiming allows the prosecutor to maintain some degree of equivalents for elements amended for reasons of patentability.

Cases after *Williamson* (cont'd)

***Media Rights Technologies, Inc*. (cont'd)**

- The language only describes functions performed by the "compliance mechanism", without suggesting anything about the structure of the mechanism, so this is a means-plus-function claim.
- Next, figure out what structure is identified in the specification performs the functions of the "compliance mechanism".
- "Because the structure for computer-implemented functions must be an algorithm, and the specification here failed to describe 'an algorithm whose terms are defined and understandable,'" the district court determined that "compliance mechanism" term is indefinite.

Cases after *Williamson* (cont'd)

Media Rights **(cont'd)**

- Means-plus function claiming allows a patentee to draft claim terms "as a means or step" without the recital of structure.
- Flexibility comes at a price: "such claims constructed to cover only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof".
- Distinguished from Invention—which described a "modernizing device" from the claims in that the specification described an electrical circuit (connoting sufficient structure) and described that it "receives signals, processes signals, and outputs signals".
- In contrast, "compliance mechanism" was not a substitute for an electrical circuit or anything else that describes sufficient structure.
- Where there are multiple claimed functions, the patentee must disclose adequate corresponding structure to perform all of the claimed functions.

Cases after *Williamson* (cont'd)

***Media Rights* (cont'd)**

- If functions are computer-implemented, the structure must be more than a general purpose computer…instead, …specification [must] disclose an algorithm for performing the stated function.
- Needs expert witness testimony that source code is algorithmic, if source code is argued as disclosing the function of the algorithm.

Cases after *Williamson* (cont'd)

Smartflash v. Apple

- "processor" is not a nonce word – processor defines a class of structures even if not a specific structure

Collaborative Agreements v. Adobe

- Claim 25 directed to a "code segment"
- Adobe argued that without enough information about how the software operates, the term "software" becomes function claiming and fails to recite sufficiently definite structure
- Court found "code segment" suggest structure according to dictionary definition
- Claim also recited description of how the "code segment" operates

Cases after *Williamson* (cont'd)

Masimo v. Phillips

- "a selection module responsive to the result of said scan to identify at least one resulting indication as representative of said physiological parameter"
  - Term "module" is vague
- "a processing configured to perform a method comprising…selecting one of the plurality of possible oxygen saturation values …to determine which of the plurality of possible oxygen saturation values corresponds to the oxygen saturation of the pulsing blood"
- Shows sufficient inputs and outputs for the processor to establish sufficient structure

Cases after *Williamson* (cont'd)

Sarif Biomedical LLC v. Brainlab, Inc.

- Claim 1: …(d) a computer adapted to:…(3) control position and displacements
- "computer adapted to" does not sufficiently define structure, so 112(6) treatment appropriate
- No disclosure as to how the computer would perform the claimed function
- "The fact that one … could program a computer to perform the recited functions cannot create structure where none otherwise is disclosed." *(citing Williamson)*

Cases after *Williamson* (cont'd)

Advanced Aero. Techs., Inc. v. United States

- *Claim 5: An aerial recovery system for an aircraft, said system comprising: an arrestment line held up at at least one end, said aircraft containing a device for capturing said line, said aircraft containing structure suitable for deflecting said line laterally into engagement with said capturing device, said structure comprising a wing of said aircraft,* ***a sensor*** *being attached to said recovery system near the point of engagement of said aircraft to said recovery system, for guidance in maneuvering said aircraft into engagement with said recovery system.*
- *Sensor was allegedly functional but Court held defendant didn't show the claim term fails to recite sufficiently definite structure*
- *Williamson said court can used dictionary to determine if a disputed term has achieve recognition as a term denoting structure*

Cases after *Williamson* (cont'd)

Gradient v. Skype

- *Skype alleges patent invalid because it does not disclose any particular algorithm for performing the recited function*
- *Where a function is to be performed by a computer "then the specification must also disclose the algorithm that the computer performs to accomplish that function. Failure to disclose the corresponding algorithm…renders the claim indefinite." (quoting* Triton Tech.*))*
- *Testimony of one of ordinary skill cannot supplant total absence of structure from the specification*
- *Patent held invalid for failing to disclose algorithm to perform the claimed functions*

Cases after *Williamson* (cont'd)

Vir2us, Inc. v. Invincea, Inc.

- Claim describes sufficient structure if it describes how a "content processor" interacts with other components (citing *Finjan v. Proofpoint*)
- "switching system" at issue: "system" a nonce word and "switching" does not impart sufficient structure

Cases after *Williamson* (cont'd)

Intellectual Ventures II LLC v. BITCO Gen. Ins. Corp.

- Mere recitation of function is not the legal test as to whether the claim is "means-plus-function" claim
- Elements implicating software structure are not necessarily means-plus-function elements (see *Apple v. Motorola*)
- Structure may be proved by descripting input, output or connections of claim limitation
- "software" and "computer code" are structure-connoting terms to those skilled in the art (see *Apple v. Motorola*)
- "interface" is not a nonce word

Cases after *Williamson* (cont'd)

Farstone Tech., Inc. v. Apple Inc.

- "backup/recovery module" and "processing system creating at least one recovery unit"
- Court agreed that "module" was a nonce word and the limitation recited function performed by "backup/recovery module"
- Prefix "backup/recovery" did not impart definite structure into the term "module"
- Special purpose computer required because backup/recovery module has specialized functions described in the specification
  - Therefore, the specification must disclose an algorithm for performing the claimed function
    - Algorithm must be expressed as formula, or flow chart or any other manner that provides sufficient structure

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Thanks for your attention! Questions?

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Functional Claiming in Chemical Applications

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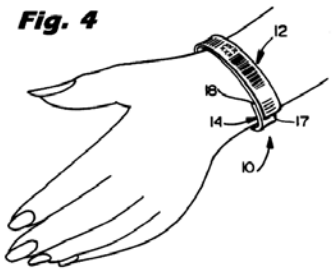
Functional Language

- Claiming something by what it does or how it works, instead of what it is.
  - "an elongated strip":
  - which is tear resistant but will tear completely if subjected to a force which would jeopardize the safety of the wearer in an amusement park environment.



  - "non-sagging and non-offsetting tungsten filaments . . . ." *GE Co. v. Wabash Appliance Corp.*, 304 U.S. 364 (1938).

Functional Language

- "Substantially pure carbon black in the form of commercially uniform, comparatively small, rounded, smooth aggregates having a spongy or porous interior." *United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228 (1942).
- "Fragile gel." *Halliburton Energy Servs. v. M-I LLC*, 514 F.3d 1244 (Fed. Cir. 2008).
- "A method for selectively inhibiting PGHS-2 activity in a human host, comprising administering a non-steroidal compound that selectively inhibits activity of the PGHS-2 gene product to a human host in need of such treatment." *Rochester v. G.D. Searle & Co., Inc.*, 375 F.3d 1303 (Fed. Cir. 2004).

Functional Language

- Advantages
  - Enables broader claim scope.
    - *Ex parte Kolarov*: "This functional limitation renders the claim quite broad, and covers essentially any embodiments that perform the recited function of matching a capacity of a communication network."[68]
  - Takes the place of structural language, where structural descriptions are not possible.
  - Adding difficulty to prior art searches that are conducted by an adverse party.

Functional Language

- Disadvantages
  - When an attorney is contemplating filing a patent application, but first intends to conduct a prior art search, the presence of functional elements in the prior art can encumber the attorney's prior art search.
  - Consequent increase in prior art rejections based on citations from technologies that are remote to the claims.
  - Functional element that is so broad and indistinct, that the functional element fails to confine the associated structural element to any particular dimension or substance.
  - Neglect to associate it with a bona fide structural element.

Functional Language

- Functional elements in claims are good, in that they can take the place of structural language, where it is impossible or difficult to use structural language.
- Functional elements are also good, in that they usually enable claim drafting that encompasses a broader range of structures than a corresponding structural element, thereby leading to broader claim scope.

Functional Language

- Advice
  - It is best to avoid functional claiming, if it can be avoided.

  - But if you are going to do it:
    - Try not use functional language at the point of novelty.
    - Make sure the functional term is defined thoroughly, including numerically.
    - Make sure there is at least one example of embodiments that perform the claimed function.

Functional Language

"A method for selectively inhibiting PGHS-2 activity in a human host, comprising administering a non-steroidal compound that selectively inhibits activity of the PGHS-2 gene product to a human host in need of such treatment." *Rochester v. G.D. Searle & Co., Inc.*, 375 F.3d 1303 (Fed. Cir. 2004).

Functional Language

"Fragile gel." *Halliburton Energy Servs. v. M-I LLC*, 514 F.3d 1244 (Fed. Cir. 2008).

Questions?

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