

# Advanced 112(f): A means for winning for patent litigators and prosecutors

August 3, 2023

John D. Vandenberg

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**Klarquist**

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## 35 U.S.C. § 112(f): Fools' Gold

“Means-plus-function claiming is fools gold — especially for anyone with a thin disclosure. The claims appear broad, but are narrowly interpreted and regularly invalidated. For years, patentees have moved away from using the term “MEANS” and replaced it with some other generalized word such as “MODULE” as used in this case. By skirting the MPF trap, these newly styled claims were more broadly interpreted and rarely invalidated as indefinite. However, that approach was collapsed by the case of *Williamson v. Citrix Online, LLC*, 792 F.3d 1339 (Fed. Cir. 2015).”

*Dennis Crouch, PATENTLYO (Mar. 21, 2021)*

*... and also a skilled practitioner's multi-function tool.*

# 35 U.S.C. §§ 101, 112(b), 112(f)

101 Inventions Patentable.—Whoever invents or discovers any new and useful **process, machine, manufacture, or composition of matter**, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

112(b) Conclusion.—The specification shall conclude with one or more claims **particularly pointing out and distinctly claiming** the subject matter which the inventor or a joint inventor regards as the invention.

112(f) 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.



# 112(f) Basics They Teach in Kindergarten



## 112(f) Triggered?

1. Absence of “means”: presumption against 112(f) applying.
2. Test: element recites function w/o particular SMA sufficient to perform the function?

## Corresponding Structure, Material, or Acts (SMA)?

1. “... described in the specification ...”
2. Saying function performed in known or conventional way, insufficient.
3. Spec. or PH must clearly link corresponding SMA to claim-recited function.
4. Corresponding SMA limited to that necessary to perform the function.
5. Includes SMA recited in dependent claim.
6. Generic computer or processor w/o algorithm normally insufficient SMA.
7. Question of law (claim construction).

## Consequences of Inadequate SMA Disclosure?

1. Invalidates claim under 112(b).

# 112(f) Basics They Teach in Kindergarten

## Infringement?

1. Literal: same function + substantially same way and result
  - a) Substantially same way?: greater weight is given to components in identified SMA playing central role in performing function.
2. Equivalents: substantially same function, way, and result
  - a) if the accused equivalent arose before the patent filing, the analysis for equivalent SMA under the doctrine of equivalents collapses into the literal equivalence analysis.

# Does any part of this claim trigger construction under Sec. 112(f)? Why? Why not?

29. A pharmaceutical **composition** comprising an isolated monoclonal antibody, wherein the isolated monoclonal antibody **binds to** at least two of the following residues S153, I154, P155, R194, D238, A239, I369, S372, D374, C375, T377, C378, F379, V380, or S381 of PCSK9 listed in SEQ ID NO: 3 and **blocks the binding** of PCSK9 to LDLR by at least 80%.

## Pros and Cons of This Claim?

X. The pharmaceutical composition of claim 29 wherein the antibody comprises **means for** binding to at least two of the following residues S153, I154, P155, R194, D238, A239, I369, S372, D374, C375, T377, C378, F379, V380, or S381 of PCSK9 listed in SEQ ID NO: 3 and blocking the binding of PCSK9 to LDLR by at least 80%.

## Does any part of this claim trigger construction under Sec. 112(f)? Why? Why not?

22. A method for manufacturing a shaft assembly of a driveline system, the driveline system further including a first driveline component and a second driveline component, the shaft assembly being adapted to transmit torque between the first driveline component and the second driveline component, the method comprising:

providing a hollow shaft member;

tuning a mass and a stiffness of at least one liner; and

inserting the at least one liner into the shaft member;

wherein the at least one liner is a tuned resistive absorber for attenuating shell mode vibrations and wherein the at least one liner is a tuned reactive absorber for attenuating bending mode vibrations.



# Does any part of this claim trigger construction under Sec. 112(f)? Why? Why not?

8. A method for coordinated geospatial and list-based mapping, the operations comprising:
- presenting** a map display on a display device, wherein the map display comprises elements within a viewing area of the map display, wherein the elements comprise geospatial characteristics, wherein the elements comprise selected and unselected elements;
  - presenting** a list display on the display device, wherein the list display comprises a customizable list comprising the elements from the map display;
  - receiving** a user input drawing a selection area in the viewing area of the map display, wherein the selection area is a user determined shape, wherein the selection area is smaller than the viewing area of the map display, wherein the viewing area comprises elements that are visible within the map display and are outside the selection area;
  - selecting** any unselected elements within the selection area in response to the user input drawing the selection area and deselecting any selected elements outside the selection area in response to the user input drawing the selection area; and
  - synchronizing** the map display and the list display to concurrently update the selection and deselection of the elements according to the user input, the selection and deselection occurring on both the map display and the list display.

# Pros and Cons of This Claim?

9. The method of claim 8 wherein the presenting step comprises a **step for** presenting said map display on a display device.

# Proposition 1

**Proposition 1**: Both sides in patent litigation under-utilize Sec. 112(f):

1. Both sides should apply 112(f) to method steps more often.
2. Both sides should apply 112(f) in life-sciences claims more often.
3. Patent owners should assert 112(f) as a shield against an *Alice/Mayo* attack.
4. Defendants should argue that a genuine ambiguity over application of 112(f) violates 112(b).

# Proposition 2

**Proposition 2**: Congress gave patent drafters this tool to use. Patent owner, master of the claim and Spec., should be rewarded for making proper use of this tool, and not rewarded for failing to make proper use of this tool.

## Proper use:

- Clear triggering of Sec. 112(f).
- Clear compliance in Spec. with conditions imposed by Sec. 112(f).
- Invoking Sec. 112(f) in litigation.

# Proposition 3

**Proposition 3**: Sec. 112(f) can be an important part of claim diversity.

# 35 U.S.C. § 112(f) Benefits

## Benefits for Patent Owners:

1. avoiding invalidity for pure functional claiming, under 101, 112(a), or 112(b), or at least not losing at pleadings stage
2. avoiding invalidity over prior art
3. ... while preserving, sometimes, fact question on infringement

## Benefits for patent challengers:

1. narrowed construction for non-infringement
2. winning 112(b) invalidity due to absence of support in Spec., or to genuine ambiguity whether 112(f) triggered

# Applying 112(f) to Method Claims

## Objections:

1. There are few precedents for doing this.
2. There's no rule for how to distinguish method steps that do trigger from method steps that do not trigger 112(f).
3. It's not as easy to identify corresponding "acts" in a specification compared to "structure".

# Applying 112(f) to Method Claims

## Responses:

1. Few precedents? There are some non-precedential Fed. Cir. decisions.
  - a. [Dionex](#) (Fed. Cir. 05/06/20) (non-precedential) (in interference, aff'g method claim step in issued patent ("controlling the valve to switch among predetermined valve positions to transfer the sample loop between a low pressure and a high pressure") triggers Sec. 112(6/f) based on expert testimony "that the claim term would not connote acts to a person of skill sufficient to perform the recited function").
  - b. [Intelligent Automation](#) (Fed. Cir. 01/30/20) (non-precedential) (aff'g that "determining a time when torque reaches a maximum") triggers Sec. 112(6/f) in method claim (which neither party disputed)).



# Applying 112(f) to Method Claims

## Responses:

1. No rule? Apply the J. Rader rule.

“A method for constructing an activity mat over a foundation comprising the steps of:

spreading an adhesive tack coating for adhering the mat to the foundation over the foundation surface; ....”

*Seal-Flex, Inc. v. Athletic Track and Court Constr.*, 172 F.3d 836, 839 (Fed. Cir. 1999).

# Applying 112(f) to Method Claims

“In general terms, the ‘underlying function’ of a method claim element corresponds to what that element ultimately accomplishes in relationship to what the other elements of the claim and the claim as a whole accomplish. ‘Acts,’ on the other hand, correspond to how the function is accomplished. ...

If a claim element recites only an underlying function without acts for performing it, then § 112, ¶ 6 applies even without express step-plus-function language. ...

[I]f this claim limitation ... had specified only the underlying function, namely, ‘adhering the mat to the foundation,’ without recital of specific acts for ‘adhering,’ § 112, ¶ 6 would have governed, despite the lack of ‘step for’ language.”

*Seal-Flex, Inc. v. Athletic Track and Court Constr.*, 172 F.3d 836, 849-51 (Fed. Cir. 2099) (Rader, J. concurring).

# Applying 112(f) to Method Claims

## Responses:

1. Difficult to identify corresponding “acts” in Spec.?
  - a. We routinely do this ... when we cite an algorithm as “structure”.

**Questions / Comments / Ridicule ?**

# Applying 112(f) to Life Sciences

## Objections:

1. It's rarely done.
2. Often, the “structure” is not a true measure of the invention and won't capture infringements.

# Applying 112(f) to Life Sciences

## Responses:

1. Rarely done? But it is done sometimes.

A pharmaceutical composition comprising a

(a) means for reducing the amount of active hsp27 in cancerous cells and

(b) a pharmaceutically acceptable carrier.

*Ex parte Gleave*, Appeal 2012-004973 (P.T.A.B. Jan. 22, 2014) (reversing 102 and 103 rejections).

“We agree with Appellants that the structures disclosed in the Specification as having the function recited in the claims are limited to (a) the specific antisense oligonucleotides in Example 1, (b) the specific RNAi molecules of Example 5, and (c) equivalents thereof, that are effective in reducing the amount of hsp27 in cancerous cells.”

# Applying 112(f) to Life Sciences

## Responses:

1. Rarely done? But it is done sometimes.

“1. A pharmaceutical composition comprising an inhibitory means for inhibiting \_\_\_ in a subject and a pharmaceutically acceptable carrier.

2. The pharmaceutical composition according to claim 1, wherein the inhibitory means comprises \_\_\_.”

# *Amgen v. Sanofi*

1. Rarely done? Good time to start!

29. A pharmaceutical **composition** comprising an isolated monoclonal antibody, wherein the isolated monoclonal antibody **binds to** at least two of the following residues S153, I154, P155, R194, D238, A239, I369, S372, D374, C375, T377, C378, F379, V380, or S381 of PCSK9 listed in SEQ ID NO: 3 and **blocks the binding** of PCSK9 to LDLR by at least 80%.

1. Neither party asserted Sec. 112(f).
  - a. Sanofi admitted infringement because its antibodies performed the same function, and then lost non-enablement before the jury.
  - b. Amgen lost ultimately, without resorting to Sec. 112(f).
2. Several *amici* in S. Ct. addressed Sec. 112(f) but parties did not and neither did the Court.

# *Amgen v. Sanofi ... Solution?*

An antibody that binds [target] comprising a variable domain and a constant domain, wherein the constant domain is [IgG] and the variable domain comprises a framework region and a complementary determining means for binding [target].



# Applying 112(f) to Life Sciences

## Objections:

2. “Structure” not true measure of the invention?

## Response:

1. Don’t limit corresponding disclosure to “structure.”
2. Include the “acts” performed by the antibody in how it binds or blocks.



“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.”

**Questions / Comments ?**

# 112(f) Shield Against *Alice / Mayo*

## Objections:

1. No precedent for this.

# 112(f) Shield Against *Alice* / *Mayo*

## Response:

1. No precedent? All else has failed! And Fed. Cir. has hinted at this shield.

Fed. Cir. routinely upholds *Alice* / *Mayo* challenges to patent claims partly because recite mere functions or results. E.g.:

- There are “two different ‘how’ requirements in patent law. The first such requirement, that of eligibility, is that the claim itself (whether by its own words or by statutory incorporation of specification details under section 112(f)) must go beyond stating a functional result; it must identify ‘how’ that functional result is achieved by limiting the claim scope to structures specified at some level of concreteness, in the case of a product claim, or to concrete action, in the case of a method claim.” [American Axle](#) (Fed. Cir. 07/31/20) (2-1).
- [IBM \(Zillow\)](#) (Fed. Cir. 10/17/22) (patent “is result-oriented, describing required functions (presenting, receiving, selecting, synchronizing), without explaining how to accomplish any of the tasks”).

## 112(f) Shield Against *Alice* / *Mayo*

- [Hawk Tech.](#) (Fed. Cir. 02/17/23) (claims “require the functional results of “receiving video images,” “digitizing any of the images not already in digital form,” “displaying one or more of the digitized images,” “converting one or more of the video source images into a selected video format,” “storing at least a subset of the converted images,” “providing a communications link,” “receiving . . . a request to receive one or more specific streams of the video images,” “transmitting . . . a version of one or more of the video images,” and “displaying only the one or more requested specific streams of the video images”).

# 112(f) Shield Against *Alice* / *Mayo*

- [Internet Patents](#) (Fed. Cir. 06/23/15) (Newman, J.) (“the idea of retaining information in the navigation of online forms”; “IPC’s proposed interpretation of “maintaining state” describes the effect or result dissociated from any method by which maintaining the state is accomplished upon the activation of an icon.” “The end result of ‘maintaining the state’ is described as the innovation over the prior art,” but “claim 1 contains no restriction on how the result is accomplished. The mechanism for maintaining the state is not described, although this is stated to be the essential innovation.”).

Questions ?

# Genuine Ambiguity Whether 112(f) Triggered Violates 112(b)

## Objections:

1. This is question of law in which skilled artisans are not versed.
2. Too difficult to distinguish a mere dispute over triggering of Sec. 112(f) vs. a genuine ambiguity.
3. No precedent for this.



# Genuine Ambiguity Whether 112(f) Triggered Violates 112(b)

## Response:

1. Question of law?
  - a. All claim-construction is question of law.
  - b. Drafter could have made it clear whether triggering 112(f).

# Genuine Ambiguity Whether 112(f) Triggered Violates 112(b)

## Response:

1. Genuine ambiguity vs. mere dispute?
  - a. True of all Sec. 112(b) determinations.
  - b. Examples of genuine ambiguity:
    - 1) Conflicting intrinsic-evidence clues on:
      - a) whether claim is to a “combination”
      - b) whether claim recites structure, material or acts sufficient to perform the claim-recited function
      - c) whether claim recites a means or step for performing a specified function
      - d) whether applicant or Examiner treated element as 112(f) element



# Genuine Ambiguity Whether 112(f) Triggered Violates 112(b)

## Response:

1. No precedent?
  - a. MPEP 2181 II.A.: “A claim may also be indefinite when the 3-prong analysis for determining whether the claim limitation should be interpreted under 35 U.S.C. 112(f) is inconclusive because of ambiguous words in the claim. After taking into consideration the language in the claims, the specification, and how those of ordinary skill in the art would understand the language in the claims in light of the disclosure, the examiner should make a determination regarding whether the words in the claim recite sufficiently definite structure that performs the claimed function. If the applicant disagrees with the examiner’s interpretation of the claim limitation, the applicant has the opportunity during the application process to present arguments, and amend the claim if needed, to clarify whether 35 U.S.C. 112(f) applies.”

**Praise / Tributes / Awards ?**

# Prosecution: “How” Inventory

Claim- recited function or result	How performed or achieved in appln.?	“How” recited in claim?	“How” clearly linked to the function, in Spec. or PH?

# Prosecution: Incorporate by Reference from Published U.S. Patent or Published U.S. Pat. App.

Law bit unsettled:

**Corresponding Structure Perhaps Cannot Be Incorporated By Reference At All, And Likely Cannot Be Incorporated By Reference To Something Other Than A Published U.S. Patent Or Patent Application:** “Material incorporated by reference cannot provide the corresponding structure necessary to satisfy the definiteness requirement for a means-plus-function clause.” [Default Proof](#) (Fed. Cir. 06/16/05) (citing *Atmel*); [Atmel](#) (Fed. Cir. 12/28/99) (2-1) (title of non-patent publication sought to be incorporated sufficient to disclose corresponding structure, but suggesting that necessary structure cannot be incorporated by reference); [Fiber](#) (Fed. Cir. 11/21/19) (non-precedential) (aff’g indefiniteness; material incorporated by reference cannot provide the corresponding structure for a means-plus-function element; citing *Default Proof*). But see [Otto Bock](#) (Fed. Cir. 02/18/14) (non-precedential) (corresponding structure may be incorporated from a U.S. pat. or patent app. but not via incorporation by reference of a non-patent publication, without mentioning if application was published: “*Atmel* only foreclosed the use of the content of a nonpatent publication incorporated by reference to add structure to a means-plus-function claim”); 37 C.F.R. § 1.57(d) (support for a Sec. 112(6/f) element is “essential material,” and may be incorporated from only a U.S. patent or published U.S. pat. application).

# Prosecution: Expressly Associate “Acts” with Method Steps and with Functions

- Spec.: “One way to adhere the mat to the foundation over the foundation surface is to spread an adhesive tack coating. Another way to do this is to do the following acts: ....”
- Spec.: “One way the isolated monoclonal antibody binds to at least two of the following residues S153, I154, P155, R194, D238, A239, I369, S372, D374, C375, T377, C378, F379, V380, or S381 of PCSK9 listed in SEQ ID NO: 3 is by doing the following acts: ....”
- Spec.: “One way to tune a mass and stiffness of a liner to attenuate shell mode vibrations is to perform the following acts: ....”

# Prosecution: Associate SMA with Functional Life Sciences Claim

- Spec.: “The following paragraphs describe embodiments of structures, materials and acts by which the disclosed antibody binds to at least two of the following residues S153, I154, P155, R194, D238, A239, I369, S372, D374, C375, T377, C378, F379, V380, or S381 of PCSK9 listed in SEQ ID NO: 3.”

# Summary

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**Proposition 3**: Sec. 112(f) can be an important part of claim diversity.



- <https://klarquist.com/patent-defenses/1126f-claim-language/>
- <https://klarquist.com/patent-defenses/literal-and-reverse-doc-equivalents/#a-sec-1126f-element>
- <https://klarquist.com/patent-defenses/equivalents/#e-relationship-to-sec-1126f>
- <https://klarquist.com/patent-defenses/particular-and-distinct-claims-aka-indefiniteness-sec-1122b-sec-1126f/>

**Thank You**

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**Klarquist**

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