




MEMORANDUM

DATE: March 18, 2024

TO: All Patent Examiners

FROM: Vaishali Udupa 
Commissioner for Patents

SUBJECT: Resources for Examining Means-Plus-Function and Step-Plus-Function Claim Limitations (35 U.S.C. 112(f))

The purpose of this memorandum is to remind examiners of the resources available when examining limitations under 35 U.S.C. 112(f) (commonly called “means-plus-function” or “step-plus-function” limitations) and to reinforce the importance of properly interpreting such limitations and of making the record clear as to your interpretation. Refresher training on this topic is available, as noted below. This memorandum does not present a change in practice for United States Patent and Trademark Office (USPTO) personnel.

I. The Manual of Patent Examining Procedure

The Manual of Patent Examining Procedure (MPEP) (9th Edition, Rev. 07.2022, February 2023) includes the latest examination guidance concerning § 112(f). Examiners should refer to MPEP sections 2181-2187 for guidance on § 112(f), including for the following topics:

- determining whether a claim limitation invokes § 112(f);
- ensuring that the record is clear with respect to § 112(f); and
- evaluating the description necessary to support a § 112(f) claim limitation under 35 U.S.C. 112(a) and (b).

This memorandum summarizes the important points related to: (1) determining whether a claim limitation invokes § 112(f), (2) clearly communicating on the record when § 112(f) has been invoked, and (3) evaluating the adequacy of the supporting disclosure. Examiners should consult the specific MPEP sections noted below for more thorough information on each topic.

A. Applicability

35 U.S.C. 112(f) provides:

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.

Drafting claims with limitations that comply with § 112(f) can be beneficial to applicants by allowing them to recite a function in a claim and rely on the specification for the corresponding

structure, material, or acts that perform the function and equivalents thereof. This technique permits the claim drafter to avoid specific identification of the means or steps for performing a claimed function in the claim itself by offering a shorthand that can point to a more robust description of the means or steps in the specification. Under this statutory construction, when an examiner determines the broadest reasonable interpretation of a claim, a limitation that invokes § 112(f) must be limited to the structure, material, or acts described in the specification as performing the entire claimed function and equivalents to the disclosed structure, material, or acts. As a result, § 112(f) limitations will, in some cases, be afforded a narrower interpretation than a limitation that is not crafted in means-plus-function or step-plus-function format. This is an important distinction when searching for and applying prior art.

Means-plus-function limitations appear much more frequently than step-plus-function limitations, which are rare. In process claims, if the claim element uses the phrase “step for,” § 112(f) is presumed to apply, but the term “step” alone and the phrase “steps of” tend to show that § 112(f) does not apply. A step limitation must not recite an act to be treated under § 112(f), but most process claims include steps with acts described by a verb ending in “-ing” (such as passing, heating, reacting, transferring, determining, etc.), which will avoid § 112(f). It is important for examiners to note that structural elements may appear in both product claims and process claims; thus, all claim types should be reviewed for the presence of means-plus-function limitations. See MPEP section 2181, subsection I.

B. Claim Interpretation

The first step in determining whether a claim limitation invokes § 112(f) is to apply the 3-prong analysis outlined in MPEP section 2181, subsection I. Specifically, examiners will apply § 112(f) to a claim limitation if it meets the following 3-prong analysis:

- (A) the claim limitation uses the term “means” or “step” or a term used as a substitute for “means” that is a generic placeholder (also called a nonce term or a non-structural term having no specific structural meaning) for performing the claimed function;
- (B) the term “means” or “step” or the generic placeholder is modified by functional language, typically, but not always linked by the transition word “for” (e.g., “means for”) or another linking word or phrase, such as “configured to” or “so that”; and
- (C) the term “means” or “step” or the generic placeholder is not modified by sufficient structure, material, or acts for performing the claimed function.

A claim limitation is presumed to invoke § 112(f) when it explicitly uses the term “means” or “step” and includes functional language. By contrast, a claim limitation that does not use the term “means” or “step” triggers the presumption that § 112(f) does not apply. Examiners should always consider whether these presumptions have been overcome by the language of the claim. The presumptions are overcome when:

- “means” or “step” is used and the claim further includes the structure, material, or acts for performing the function (§ 112(f) is not invoked)
- the limitation recites functional language along with a generic placeholder term instead of “means” and fails to recite sufficiently definite structure for performing the function (§ 112(f) is invoked).

Saying it another way, a limitation that recites function without reciting sufficient structure, material, or acts (for purposes of simplicity, here and below referred to as “structure”) for performing that function is to be interpreted under § 112(f). To evaluate whether a claim term

represents sufficient structure, “[t]he standard is whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.” See MPEP section 2181, subsection I, quoting *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349, 115 USPQ2d 1105, 1111 (Fed. Cir. 2015) (en banc).

It is important to remember that there are no absolutes or approved lists of terms used as a substitute for “means” that serve as generic placeholders. The examiner must carefully consider the term in light of the specification and the commonly accepted meaning in the technological art. Claim interpretation will turn on its own facts in every application. MPEP section 2181 provides examples of terms commonly at issue—including “code,” “application,” “program,” and “user interface code”—that have been found not to be generic placeholders in cases in which persons of ordinary skill in the art would understand the terms as connoting structure when used in combination with the function performed by the code or application. In comparison, the following terms have been found, in certain circumstances, to be structural generic placeholders that invoke § 112(f): “mechanism for,” “module for,” “device for,” “unit for,” “component for,” “element for,” “member for,” “apparatus for,” “machine for,” and “system for.” See MPEP section 2181, subsection I (A).

Establishing the interpretation of § 112(f) limitations in writing during prosecution is critical in supporting the agency goal of establishing a clear prosecution record. Form paragraphs are available to create a claim interpretation section in an Office action in which examiners can set forth any presumptions and clarifying remarks. When this is done, the applicant, the public, and the courts are notified as to the claim construction the examiner used during prosecution. This further informs the applicant, the public, and the courts (and the USPTO for any post-grant review procedures) as to how the examiner searched and applied prior art based on the examiner’s interpretation of the claim. Additionally, if the applicant intends a different claim construction, the issue can be clarified early in prosecution, and the examiner can revisit the prior art based on any different claim construction. See MPEP section 2181, subsection VI.

C. Adequate Support for § 112(f) Limitations

Invoking § 112(f) allows a claim limitation to recite a function and rely on the application specification to specify the structure that performs the function. Once the claim interpretation has been established and the examiner determines that a claim includes a § 112(f) limitation, the adequacy of the supporting disclosure must be evaluated under §§ 112(a) and (b) to determine whether the boundaries of the claim scope are clearly defined, an adequate written description has been provided, and the claim is fully enabled.

i. Indefiniteness under § 112(b)

The proper test for meeting the definiteness requirement of a § 112(f) limitation is that the corresponding structure must be disclosed in the specification itself in a way that one skilled in the art will understand what structure will perform the entire recited function. If there is no disclosure of structure for performing the entire recited function, the claim fails to satisfy the requirements of § 112(b) and should be found indefinite. Further, the structure disclosed in the written description must be clearly linked to or associated with the function recited in the claim, or the claim should be found indefinite. See MPEP section 2181, subsection II et seq. It is important to note that when § 112(f) is invoked, the scope of the claim is limited to the particular structure disclosed, together with equivalents. Definiteness is not the same as enablement, which requires only the disclosure of sufficient information so that a person of ordinary skill in the art could make and use the invention.

Indefiniteness based solely on an inconclusive result from the 3-prong analysis (i.e., the inability to determine whether a claim limitation is a § 112(f) limitation or not) should be rare because to

perform the analysis, the examiner will have taken 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. Using that knowledge, the examiner should be able to determine whether the words in the claim recite a structure that performs the claimed function. In situations in which the claim is ambiguous, *the examiner should state their interpretation on the record.*

ii. Special considerations for computer-implemented claim limitations

For computer-implemented § 112(f) claim limitations, the specification must disclose an algorithm for performing the claimed specific computer function, or the claim should be found indefinite. The sufficiency of the disclosure of the algorithm must be determined in light of the level of ordinary skill in the art. Applicant may express the algorithm in any understandable terms including as a mathematical formula, in prose, in a flow chart, or in any other manner that provides sufficient structure. A claim that recites a means for performing a specific computer-implemented function and only discloses a general purpose computer as the structure designed to perform that function would not be an adequate disclosure of the corresponding structure to satisfy the requirements of § 112(b). See MPEP section 2181, subsection II (B).

iii. Adequate written description and enabling disclosure under § 112(a)

A § 112(f) claim limitation that is found to be indefinite under § 112(b) based on failure of the specification to disclose corresponding structure that performs the entire claimed function will also lack adequate written description and may not be sufficiently enabled to support the full scope of the claim under § 112(a).

To determine whether the claim limitation finds adequate written descriptive support in the specification, the examiner must consider whether the specification describes the claimed invention in sufficient detail to establish that the inventor or joint inventor(s) had possession of the claimed invention as of the application's filing date. Additionally, any analysis of whether a particular claim is supported by the disclosure in an application requires a determination of whether that disclosure, when filed, contained sufficient information regarding the subject matter of the claim to enable one skilled in the pertinent art to make and use the claimed invention. See MPEP § 2181, subsection IV, and MPEP section 2185.

II. Training

Refresher training highlighting the resources and points in this memo is available. The training includes computer-based training and instructor led training from the [Training for Experienced Examiners](#) program and is available through the [Office of Patent Training](#). Examiners can access the training on a voluntary basis using the 25-hour training allotment.

In addition, the USPTO maintains an intranet [35 U.S.C. 112 webpage](#) with past training offerings. Specific training on § 112(f) is available on the "112(f)" tab. The available training includes "Examining Computer-Implemented Functional Claim Limitations for Compliance with 35 U.S.C. § 112," "Application of New Form Paragraphs for Addressing Issues Related to § 112(f) or 'Means-plus-Function' Limitations," and "Addressing 35 U.S.C. § 112(f) or 'Means-plus-Function' Limitations in an Office Action using New Form Paragraphs." A list of Technology Center points of contact is also available on the [Contact List webpage](#).