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**FUNCTIONAL CLAIMING
AND
FUNCTIONAL DISCLOSURE**

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FUNCTIONAL CLAIMING AND FUNCTIONAL DISCLOSURE

Mention “functional claiming” to your neighborhood patent attorney and he or she might assume that you are referring to claims drafted using the means-plus-function claiming paradigm set forth in 35 U.S.C. § 112, sixth paragraph. But there is another concept embraced by the term “functional claiming” – it also refers to claiming an invention by reciting what it does (its functions), rather than reciting its structure. This paper is primarily concerned with the latter method of claiming.

Beyond the requirements for novelty and nonobviousness, the patent statute requires that inventions be claimed in such a way as to be supported and enabled by the written description of the invention.¹ It also requires that inventions be claimed with particularity.² Nothing in the patent statute prohibits an invention from being claimed using “functional” language. But a review of the case law suggests that the use of so-called “functional” language in a patent claim may increase the likelihood that the claim will be held unpatentable or invalid. Consider the following hypothetical claim:

Claim 1: An apparatus configured to:
receive a satellite signal;
process the signal to detect a synchronization indicator;
extract the synchronization indicator; and
display the synchronization indicator on a display device.

Why would anyone want to draft such a patent claim? The natural reason is that it is exceedingly broad in scope.³ This claim, if granted, would apparently cover any and every apparatus that is “configured to” perform the functions recited in the body of the claim. It would be exceedingly difficult to design around such a claim unless the functions of the accused device were different from those recited in the claim. Yet the validity or scope of such a claim -- and similarly “functional” claims -- might be subject to attack on a number of grounds, each of which is discussed separately below.

Failure of Enablement or Written Description – Scope of Claim Exceeds Scope of Disclosure

A first line of attack would be to challenge the validity of the hypothetical claim on the basis that it is not fully enabled, or that it lacks sufficient written description support in the specification. Because the hypothetical claim purports to include every type of apparatus that performs the recited functions, its breadth is likely not commensurate in scope with the scope of the structures disclosed in the specification for performing such functions. In *LizardTech, Inc. v. Earth Resource Mapping, Inc.*,⁴ the Federal Circuit held that a patent

¹ 35 U.S.C. § 112, first paragraph.

² 35 U.S.C. § 112, second paragraph.

³ Another reason to claim inventions “functionally” is that there may be no easy way to claim certain features based on their structure.

⁴ 424 F.3d 1336 (Fed. Cir. 2005).

claim was invalid on the basis that it was broader than was enabled by or described in the patent specification.⁵

LizardTech's patent specification repeatedly described a compression process as "seamless," and the prosecution history also emphasized that it was "seamless." According to the Federal Circuit, the specification only described a single way of performing a "seamless" compression, but that single way was not recited in the claim at issue. The court stated that "a person of skill in the art would not understand how to make a seamless DWT generically and would not understand LizardTech to have invented a method for making a seamless DWT, except by 'maintaining updating sums of DWT coefficients,'"⁶ a feature that was not recited in the claim. Therefore, the claim was held to be invalid because the full breadth of the claim scope was not enabled.

Judge Bryson, writing for the court, drew an analogy to claiming an automobile engine:

By analogy, suppose that an inventor created a particular fuel-efficient automobile engine and described the engine in such detail in the specification that a person of ordinary skill in the art would be able to build the engine. Although the specification would meet the requirements of section 112 with respect to a claim directed to that particular engine, it would not necessarily support a broad claim to every possible type of fuel-efficient engine, no matter how different in structure or operation from the inventor's engine. The single embodiment would support such a generic claim only if the specification would "reasonably convey to a person skilled in the art that [the inventor] had possession of the claimed subject matter at the time of filing" . . . and would "enable one of ordinary skill to practice 'the full scope of the claimed invention.'"⁷

The Federal Circuit invalidated a claim based on a similar rationale in *National Recovery Technologies, Inc. v. Magnetic Separation Systems, Inc.*⁸ As explained by the court, "The case before us presents a classic example of a claim that is broader than the enablement as taught in the specification."⁹

And in *Automotive Technologies International v. BMW of North America*,¹⁰ a means-plus-function claim limitation that was asserted to cover both a mechanical sensor and an electronic sensor was held to be invalid because "the full scope [of the claim] must be enabled, and the district court was correct that the specification did not enable the full scope of the invention because it did not enable electronic side impact sensors."¹¹ Although the

⁵ The court concluded that neither requirement was met. *Id.* at 1345.

⁶ *Id.* at 1345.

⁷ 424 F.3d at 1346.

⁸ 166 F.3d 1190 (Fed. Cir. 1999).

⁹ *Id.* at 1196.

¹⁰ 501 F.3d 1274 (Fed. Cir. 2007).

¹¹ *Id.* at 1282.

patent specification provided a detailed description of a mechanical sensor, it provided only a cursory description of an electronic sensor, thus dooming the claim.

Given that the patent system was created to promote innovation by encouraging the disclosure of useful inventions to the public and promoting progress in the arts, the policy of invalidating “overly broad” claims would appear to further the goals of the patent system. If an inventor is able to develop a drug that cures cancer, for example, it seems unthinkable that he or she should be able to claim the drug by merely reciting “A drug having a composition that cures cancer.” Such a broad claim, if upheld, would clearly stifle further innovation in the field of cancer research. Patent applicants therefore should be mindful of overreaching by claiming an invention using nothing more than functional language.

Indefiniteness: Improper Mixing of Statutory Invention Categories

A second possible attack on the hypothetical claim would be to allege that it is indefinite because it improperly mixes two statutory categories of invention – a machine (apparatus) and a method (process steps). More specifically, the preamble purports to define the statutory category of the invention as an apparatus, but the body of the claim recites only functions or steps.

The Federal Circuit invalidated a claim on that basis in *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*¹² A dependent claim that recited “the system of claim 2 wherein . . . *the user uses the input means* to either change the predicted transaction information or accept the displayed transaction type and transaction parameters” was held to be indefinite and thus invalid. Noting that “[w]hether a single claim covering both an apparatus and a method of use of that apparatus is invalid is an issue of first impression in this court,” the Federal Circuit held that the claim was indefinite because it was unclear whether infringement of the claim occurred upon creation of a system that allowed the user to perform the recited step, or whether infringement occurred only when the user actually used the claimed apparatus in the recited manner.¹³

A district court recently invalidated two patent claims because they improperly mixed apparatus and method categories of invention. In *HTC Corp. v. IPCom GMBH & Co., KG*,¹⁴ the invention related to a synchronization technique for mobile telephones. Claim 1 of the patent recited the following:

1. *A mobile station* for use with a network including a first base station and a second base station *that achieves a handover* from the first base station to the second base station *by:*

storing link data for a link in a first base station,

holding in reserve for the link resources of the first base station, and

¹² 430 F.3d 1377 (Fed. Cir. 2005).

¹³ *Id.* at 1384.

¹⁴ 2010 WL 3338536 (D.D.C. Aug. 25, 2010).

when the link is to be handed over to the second base station:

initially *maintaining* a storage of the link data in the first base station,

initially *causing* the resources of the first base station to remain held in reserve, and

at a later timepoint determined by a fixed period of time predefined at a beginning of the hand-over, *deleting* the link data from the first base station and freeing up the resources of the first base station, the mobile station comprising:

an arrangement for reactivating the link with the first base station if the handover is unsuccessful. [emphasis added]¹⁵

As can be seen in the italicized text above, the claim preamble begins by defining the invention in terms of an apparatus (a mobile station), but the body of the claim contains several functions or steps that appear to define a method. The court concluded that although this claim and another similar claim recited an apparatus, they also recited six method steps in a way that described the apparatus as actually performing the method. According to the court, “Claims One and Eighteen improperly claim both an apparatus and method steps and thus are indefinite and invalid.”¹⁶ So the lesson from this case is that failure to recite sufficient structure in an apparatus claim, while reciting primarily functions or steps in the claim, may lead to invalidity. For a contrary result, see *Toshiba Corp. v. Juniper Networks, Inc.*¹⁷

The Federal Circuit revisited the mixed-category claim issue in *Microprocessor Enhancement Corp. v. Texas Instruments Inc.*¹⁸ In that case, a method claim that recited many structural details of the system in which it was to be performed was held to be not invalid for indefiniteness on the ground that it impermissibly mixed two distinct classes of patentable subject matter. Similarly, an apparatus claim that recited several functions of the structural components was deemed to be not invalid on the same ground. The drafting structure of independent method claim 1 was as follows:

1. A method of executing instructions in a pipelined processor comprising:
[structural limitations of the pipelined processor];
the method further comprising:
[method steps implemented in the pipelined processor].¹⁹

¹⁵ *Id.* at *22.

¹⁶ *Id.* at *26.

¹⁷ 2006 WL 1788479 (D. Del. June 28, 2006) (apparatus claims drafted using “active functional language” rather than “passive language” nevertheless did not improperly recite a method of using that apparatus).

¹⁸ 520 F.3d 1367 (Fed. Cir. 2008).

¹⁹ *Id.* at 1374.

Independent claim 7 recited an apparatus (a “pipelined processor”) that recited various structural components, but it also recited certain functions performed by some of those structural components. For example, the claim recited “the conditional execution decision logic pipeline stage *performing a boolean algebraic evaluation* of the condition code and said conditional execution specifier *and producing* an enable-write with at least two states, true and false.”²⁰ It also recited “at least one write pipeline stage *for writing the results* of each instruction to specified destinations.”²¹

According to the Federal Circuit, “apparatus claims are not necessarily indefinite for using functional language . . . [f]unctional language may also be employed to limit the claims without using the means-plus-function format.”²² The court explained that “[d]irect infringement of claim 1 is clearly limited to practicing the claimed method in a pipelined processor possessing the requisite structure.”²³ As to independent apparatus claim 7, the court noted the “functional” language but upheld its validity, explaining that it was “clearly limited to a pipelined processor possessing the recited structure and *capable* of performing the recited functions.”²⁴

So the mere presence of both functional and structural features in the same claim will not lead to invalidity of the claim. Nevertheless, claim drafters should be careful when using functional language in apparatus claims in a way that might be argued to be indefinite.

Unintended Statutory Category of Invention

A third potential attack on the hypothetical claim would be to redirect the statutory invention category to which it belongs. Patent attorneys frequently draft separate apparatus and method claims to target different categories of infringers. For example, method claims may be drafted in such a way that they are only infringed by the purchaser or end user of a device, whereas an apparatus claim may be drafted in such a way that it is infringed by a manufacturer of the accused device. In the hypothetical claim set forth earlier, the preamble purports to identify the claim as an apparatus claim, so that anyone who makes such an apparatus would be a target infringer. Yet the body of the claim recites only method steps. In other words, the patent attorney intended to draft a very broad apparatus claim using functional steps.

Under established precedent, not every claim preamble is given weight – i.e., the words in the preamble sometimes form no part of the infringement or validity inquiry and thus can be ignored for purposes of analyzing infringement or validity. One tenet of this precedent states that if the body of the claim recites a “structurally complete invention,” then the preamble is given no effect.²⁵ Given that the body of the hypothetical claim appears to

²⁰ *Id.* at 1371.

²¹ *Id.*

²² *Id.* at 1375.

²³ *Id.*

²⁴ *Id.* (emphasis in original).

²⁵ *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997) (“where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention, the

recite a complete set of method steps, it is possible that a court might give the “apparatus” terminology in the preamble no weight, leaving the patent owner with a claim to a method, rather than to an apparatus claim as intended by the drafter of the claim.

May the PTO Ignore “Functional” Features of Apparatus Claims?

The PTO has taken the position that an apparatus claim must be *structurally distinguishable* from the prior art. See MPEP § 2114 (“While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. . . . Apparatus claims cover what a device is, not what a device does,” citing *In re Schrieber*²⁶ and *Hewlett-Packard Co. v. Bausch & Lomb Inc.*²⁷). But the cases cited for that proposition contain no such rule that an apparatus claim must be “structurally distinguishable” over the prior art.

Assuming that a PTO examiner were to apply that rule to the examination of the hypothetical claim above, it would seem to run afoul of established PTO practice. There do not, however, appear to be any Federal Circuit decisions invalidating a claim on that basis or ignoring functional limitations in apparatus claims.²⁸ In view of established precedent stating that “functional” limitations are permitted in apparatus claims, it does not appear that the PTO may ignore “functional” recitations in apparatus claims.

Invalidity of Single-Means Claims

Although means-plus-function claiming is generally beyond the scope of this paper, one might wonder whether some of the potential pitfalls above could be avoided by using a broad means-plus-function claiming strategy. Consider a slightly revised version of the above hypothetical claim:

Claim 2: An apparatus comprising:
means for receiving a satellite signal, processing the signal to detect a synchronization indicator, extracting the synchronization indicator, and displaying the synchronization indicator on a display device.

This hypothetical claim 2 recites exactly the same functions as the hypothetical claim 1 above, but it does so using the statutorily-sanctioned means-plus-function format. Suppose further that the patent specification discloses a “processor” as the structure corresponding to

preamble is not a claim limitation.”). Other case law not cited here holds that preambles may be limiting in other circumstances.

²⁶ 128 F.3d 1473 (Fed. Cir. 1997).

²⁷ 909 F.2d 1464, 1468 (Fed. Cir. 1990).

²⁸ Some language in earlier CCPA cases might be read to suggest this. See *In re Danly*, 263 F.2d 844, 848 (CCPA 1959) (“Claims drawn to an apparatus must distinguish from the prior art in terms of structure rather than function.”); *In re Michelin*, 256 F.2d 317, 320 (CCPA 1958) (“It is well settled that patentability of apparatus claims must depend upon structural limitations and not upon statements of function.”). Cf. *In re Schreiber*, 128 F.3d 1473, 1478 (Fed. Cir. 1997) (“A patent applicant is free to recite features of an apparatus either structurally or functionally.”); *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1363 (Fed. Cir. 1999) (“The functional language is, of course, an additional limitation in the [apparatus] claim.”)

the functions recited in this means-plus-function clause. This would mean that the claim would apparently cover any and all processors – and equivalents thereof – that perform the functions recited in the body of the claim. Could this claim achieve a scope nearly as broad as claim 1 in terms of its functional reach and yet avoid possible invalidity attacks?

The Federal Circuit early on answered this question, and the answer is no. In *In re Hyatt*,²⁹ the inventor drafted the following claim, which was affirmed as unpatentable by the PTO’s Board of Patent Appeals and Interferences:

35. A Fourier transform processor for generating Fourier transformed incremental output signals in response to incremental input signals, said Fourier transform processor comprising
incremental means for incrementally generating the Fourier transformed incremental output signals in response to the incremental input signals. [emphasis added]

The Federal Circuit affirmed, holding that so-called “single means” claims do not comply with the enablement requirement. According to the Federal Circuit, “[t]he long-recognized problem with a single means claim is that it covers every conceivable means for achieving the stated result, while the specification discloses at most only those means known to the inventor.”³⁰

This proposition might be questioned after the Federal Circuit’s later decision, *In re Donaldson Co.*,³¹ in which the court stated that the PTO must interpret means-plus-function clauses in light of the corresponding structure described in the specification, rather than interpreting such clauses to cover every possible means that could perform the recited function. Under the *Donaldson* holding, it seems that the “incremental means” in *Hyatt* would not cover “every conceivable means” for performing the recited function, but only the structures – and equivalents thereof – described in the patent specification. Nevertheless, *Hyatt* has not been overturned or cabined by the Federal Circuit, and it apparently remains good law. And the Federal Circuit in *Hyatt* explained that *combination claims* drafted using means-plus-function format are not improper.³² So, merely adding a second clause (even a means-plus-function clause) to the claim would appear to solve this problem.

Although *Hyatt* is still good law, a district court recently refused to invalidate a claim under the *Hyatt* rationale. In *CBT Flint Partners, LLC v. Return Path, Inc.*,³³ the asserted claim was as follows:

6. An apparatus for determining whether a sending party sending an electronic mail communication to an intended receiving party is an authorized sending party, the apparatus comprising:

²⁹ 708 F.2d 712-13 (Fed. Cir. 1983).

³⁰ *Id.* at 714.

³¹ 16 F.3d 1189 (Fed. Cir. 1994).

³² 708 F.2d at 715.

³³ 566 F.Supp.2d 1363 (N.D. Ga. 2008).

*means in communication with a network for detecting an indication of an origin of an electronic mail communication initiated by the sending party and for comparing the indication to an authorization list to determine whether or not the sending part is an authorized sending party, the authorization list corresponding to a list of sending parties from whom the intended receiving party will receive electronic mail communications, wherein the computer, upon determining that a sending party is not an authorized sending party, calculates a fee to be charged to the unauthorized sending party. [emphasis added]*³⁴

On its face, this claim appears to recite only a single “means,” as indicated by the italicized text appearing above. Nevertheless, the district court found that this was not a single-means claim. According to the court, “The key question is: what is a combination? . . . In this case, the ‘means’ described includes both means in communication with a network for detecting, and a means for comparing any indication to an authorization list.”³⁵ The corresponding structure was argued by the patent owner to be “one or more computers in communication with each other.” Nevertheless, the court invalidated the claim on a different ground – it was indefinite because the inventor failed to disclose any specific corresponding structure in the specification to support the recited functions in the claim, assuming that the claim was interpreted to be in means-plus-function format.³⁶

Care must be taken to avoid inadvertently drafting a “single-means” claim in view of established case law holding that a claim limitation may be interpreted to be a means-plus-function element even if the word “means” is not used.³⁷

Given that *Hyatt* can be avoided by claiming at least two elements in combination, how might a claim drafter broadly draft a claim to cover an apparatus that performs the recited functions? Consider the following third version of hypothetical claim 1:

Claim 3: An apparatus comprising:

a processor, and
a memory storing instructions that, when executed, cause the apparatus to
 receive a satellite signal;
 process the signal to detect a synchronization indicator;
 extract the synchronization indicator; and
 display the synchronization indicator on a display device.

Assume further that the term “processor” and “memory” have well-understood meanings in the art, and that the specification provides broad descriptions for what similar structures

³⁴ *Id.* at 1367.

³⁵ 566 F.Supp.2d at 1371-72.

³⁶ *Id.* at 1372.

³⁷ *See, e.g.,* Massachusetts Institute of Technology v. Abacus Software, 462 F.3d 1344 (Fed. Cir. 2006) (“colorant selection mechanism” deemed to be a means-plus-function limitation).

would fall within the definition of a “processor.” (An inventor can, after all, be his own lexicographer.) This claiming strategy is one used by the author of this paper and has resulted in numerous patents.

The format of claim 3 above would appear to avoid most of the problems identified above regarding “functional” claiming, and would appear to fall comfortably within the holding of the *Microprocessor Enhancement* case discussed earlier as not improperly mixing statutory invention categories.

Indefiniteness: Claiming Function Without Metrics

Sometimes the patent drafter may use an adjective or adverb in a claim to describe a property in functional, non-numeric terms. Although this problem is not implicated in the hypothetical claims discussed above, it may arise more commonly in the chemical, pharmaceutical, and biotechnology areas. For example, in *Halliburton Energy Services, Inc. v. M-I LLC*,³⁸ the patent drafter used the term “fragile gel” in a claim directed to a drilling fluid. Because “fragile” is an adjective that defines a function or property of the claimed gel, it was attacked on the ground that the specification provided no meaningful definition of “fragile” that could be used to measure the scope of the claims.

The Federal Circuit agreed, concluding that “it is ambiguous as to the requisite degree of the fragileness of the gel, the ability of the gel to suspend drill cuttings (i.e., gel strength), and/or some combination of the two.”³⁹ The court cautioned that, “When a claim limitation is defined in purely functional terms, the task of determining whether that limitation is sufficiently definite is a difficult one that is highly dependent on context (e.g., the disclosure in the specification and the knowledge of a person of ordinary skill in the relevant art area).”⁴⁰ Seemingly providing advice to patent drafters, the court explained that “the patent drafter could have provided more specifics in this case, either with quantitative metrics as to how quickly the gel must break . . . and how strong the gel must be”⁴¹

Functional Claiming is Not New

Attempts by inventors to broadly claim their inventions using functional language are not new. More than 150 years ago, the U.S. Supreme Court struck down a patent claim on such a basis in *O’Reilly v. Morse*.⁴² In that dispute, Samuel B. Morse attempted to claim his telegraph invention using the following “functional” language:

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 making or

³⁸ 514 F.3d 1244 (Fed. Cir. 2008).

³⁹ *Id.* at 1256.

⁴⁰ *Id.* at 1255.

⁴¹ *Id.* at 1256 n.6.

⁴² 56 U.S. (15 How.) 62 (1853).

printing intelligible characters, letters, or signs, at any distances, being a new application of that power, of which I claim to be the first inventor or discoverer.”⁴³

Although the claim covered many different means of performing telegraphic communication, the Supreme Court concluded that Morse did not describe how to make or use all such means, and the claim was thus held to be invalid.⁴⁴ A later U.S. Supreme Court decision went further, stating that “a patentee may not broaden his product claims by describing the product in terms of function.”⁴⁵

More than one hundred years later, the Court of Customs and Patent Appeals (CCPA) endorsed “functional” claiming in *In re Swinehart*,⁴⁶ which involved a claim to a composition that was “transparent to infra-red rays.” The claim also recited that the composition was a “solidified melt” of two components having a particular chemical makeup. The PTO had rejected the claim on the basis that it was indefinite because it was “functional.” The CCPA reversed, holding that “there is no support, either in the actual holdings of prior cases or in the statute, for the proposition, put forward here, that ‘functional’ language, in and of itself, renders a claim improper.”⁴⁷

Nearly 30 years later, in *In re Schrieber*,⁴⁸ the Federal Circuit addressed a claim directed to a device for dispensing popped popcorn. The claim recited a top that allowed a user to dispense only a few kernels at a time, using the functional language “the taper of the top being uniform and such as to by itself jam up the popped popcorn before the end of the cone and permit the dispensing of only a few kernels at a shake.” The Federal Circuit explained that:

a patent applicant is free to recite features of an apparatus either structurally or functionally Yet, choosing to define an element functionally, i.e., by what it does, carries with it a risk. . . . [W]here the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on.⁴⁹

Other recent court decisions have upheld the use of such functional claim language as “configured to”⁵⁰ and “adapted to.”⁵¹

⁴³ *Id.* at 86.

⁴⁴ *Id.* at 119-20.

⁴⁵ *General Elec. Co. v. Wabash Appliance. Corp.*, 304 U.S. 364, 371 (1938).

⁴⁶ 439 F.2d 210 (CCPA 1971).

⁴⁷ *Id.* at 213.

⁴⁸ 128 F.3d 1473 (Fed. Cir. 1997).

⁴⁹ *Id.* at 1478 (quoting *In re Swinehart*).

⁵⁰ *Collaboration Props., Inc. v. Tandberg ASA*, 2006 WL 1752140, 81 USPQ2d 1530 (N.D. Cal. 2006).

⁵¹ *Power-One, Inc. v. Artesyn Tech., Inc.*, 599 F.3d 1343, 1348 (Fed. Cir. 2010) (“the terms ‘adapted to’ and ‘near’ are not facially vague or subjective. . . . The term ‘adapted to power’” means that the regulator is

More recently, in *Microprocessor Enhancement Corp. v. Texas Instruments Inc.*,⁵² a method claim reciting many structural details of the system in which it was to be performed was held to be not invalid for indefiniteness. Similarly, an apparatus claim that recited several functional steps was deemed to be not invalid on the same ground. In upholding the validity of the claims, the Federal Circuit explained that “apparatus claims are not necessarily indefinite for using functional language Functional language may also be employed to limit the claims without using the means-plus-function format.”⁵³

So there is no *per se* rule proscribing functional claiming, as long as the other requirements of the patent statute have been met.⁵⁴

Is “Purely” Functional Claiming Permitted?

One might think that the principles for “functional claiming” have by now been fairly well settled. Claiming an invention by its function rather than its structure is permissible as long as certain requirements are met. First, the full scope of the claim must be enabled by the breadth of disclosure in the specification.⁵⁵ Second, the claim must not run afoul of the Federal Circuit’s *IPXL Holdings*⁵⁶ case, which held that a claim may be indefinite if it improperly mixes and matches two statutory classes of invention, such as a machine intertwined with a method of using that machine. Finally, the claim must not fall into the category of a “single-means” claim of the type encountered in *In re Hyatt*.⁵⁷

But a recent precedential opinion by the PTO’s Board of Patent Appeals and Interferences may have called into question the extent to which “purely functional” claiming may be used. In *Ex Parte Miyazaki*,⁵⁸ an expanded five-member panel of the Board declared that “purely functional” claim language does not comply with the patent statute. Representative claim 15 of Miyazaki’s application appears below:

15. A large printer comprising:

a sheet feeding area operable to feed at least one roll of paper, at least one sheet of paper and at least one stiff carton toward a printing unit at which printing is performed thereon; and

“capable of delivering power at the level required by the circuit.”); *Central Admixture Pharm. Serv., Inc. v. Advanced Cardiac Solutions, P.C.*, 482 F.3d 1347 (Fed. Cir. 2007); *Mattox v. Infotopia, Inc.*, 2005 WL 1220506 (Fed. Cir. 2005) (unpublished).

⁵² 520 F.3d 1367 (Fed. Cir. 2008).

⁵³ *Id.* at 1375.

⁵⁴ For a somewhat analogous problem involving process claims that fail to set forth any steps in the process, see MPEP § 2173.05(q) (“Attempts to claim a process without setting forth any steps involved in the process generally raises an issue of indefiniteness under 35 U.S.C. 112, second paragraph.”)

⁵⁵ See, e.g., *LizardTech, Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336 (Fed. Cir. 2005).

⁵⁶ *IPXL Holdings, L.L.C v. Amazon.com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2005).

⁵⁷ 708 F.2d 712, 714 (Fed. Cir. 1983) (claim covered every conceivable means for achieving the stated result, but the specification disclosed only those means known to the inventors).

⁵⁸ 89 USPQ2d 1207, 2008 WL 5105055 (B.P.A.I. 2008).

a cover member, which covers a first feeding path for the roll of paper from above, and which supports at least one of the sheet of paper and the stiff carton from below to constitute a part of a second feeding path for the sheet of paper,

wherein the cover member extends linearly from an upstream portion thereof to a downstream portion thereof in connection with a direction in which at least one of the sheet of paper and the stiff carton is fed at the sheet feeding area, and

wherein the cover member is disposed between at least one of the sheet of paper and the stiff carton and the roll of paper at a location in the sheet feeding area at which the roll of paper is in a rolled shape.⁵⁹

The Board entered a new ground of rejection for this claim under 35 U.S.C. § 112, first paragraph, on the basis that the claimed “sheet feeding area operable to feed” was “a purely functional recitation with no limitation of structure.”⁶⁰ The basis for the rejection was lack of enablement – i.e., the scope of the claim was insufficiently enabled.

The Board reached this decision by first revisiting the U.S. Supreme Court’s 1946 decision in *Halliburton Oil Well Cementing Co. v. Walker*,⁶¹ wherein the Supreme Court held invalid an apparatus claim on the basis that it used a “means-plus-function” term that was purely functional. In that case, the Supreme Court had criticized “conveniently functional language at the exact point of novelty.”⁶² The Board then noted that the sixth paragraph of 35 U.S.C. § 112 was enacted in response to *Halliburton*, allowing means-plus-function claiming to be used under certain circumstances.

But the Board also concluded that the Supreme Court’s policy proscribing “purely functional” claiming remained good law for claims that were not drafted in accordance with the new statutory scheme.⁶³ According to the Board:

This general prohibition against the use of “purely functional claim language” (and the more specific *Halliburton* rule) has not been completely eliminated. Rather, “purely functional claim language” is now permissible but only under the conditions of 35 U.S.C. § 112, sixth paragraph, i.e., if its scope is limited to the corresponding structure, material, or act disclosed in the specification and equivalents thereof.⁶⁴

⁵⁹ 2008 WL 5105055 at *1.

⁶⁰ *Id.* at *10.

⁶¹ 329 U.S. 1 (1946).

⁶² *Id.* at 8.

⁶³ Miyazaki, 2008 WL 5105055 at *12-13.

⁶⁴ *Id.* at *13.

The Board also concluded that claims not drafted using means-plus-function format could run afoul of the so-called *Halliburton* rule – in other words, *Halliburton* had a broader reach than means-plus-function claims. The Board explained that

claims 15 and 26, which recite “a sheet feeding area operable to feed . . . ,” violate the rule set forth in *Halliburton*, because the claims are not limited by the application of 35 U.S.C. § 112, sixth paragraph, and they do not contain any additional recitation of structure. As such, these claims are unpatentable under 35 U.S.C. § 112, first paragraph, for lack of an enabling disclosure commensurate with the scope of the claims.⁶⁵

Of some interest is the Board’s reliance on the Supreme Court’s 1946 *Halliburton* case but not more recent Federal Circuit cases involving “functional” claiming. As pointed out above, for example, the Federal Circuit earlier that year decided *Microprocessor Enhancement Corp. v. Texas Instruments Inc.*,⁶⁶ in which the court explained, “As this court recently stated, apparatus claims are not necessarily indefinite for using functional language . . . *Functional language may also be employed to limit the claims without using the means-plus-function format.*”⁶⁷ Although the Federal Circuit was addressing “functional” claim language in the context of the definiteness requirement of the patent statute, it is unclear whether the *Miyazaki* decision is consistent with *Microprocessor Enhancement*. At least one district court has declined to follow it.⁶⁸

Nor did the Board mention the CCPA’s seminal case of *In re Swinehart*,⁶⁹ discussed above, where the court clearly stated that, “there is no support, either in the actual holdings of prior cases or in the [Patent Act], for the proposition, put forward here, that ‘functional’ language, in and of itself, renders a claim improper,” and there is no “other ground for objecting to a claim on the basis of any language, ‘functional’ or otherwise, beyond what is already sanctioned by the provisions of 35 U.S.C. § 112.”⁷⁰

More recently, another expanded panel of the Board decided *Ex Parte Rodriguez*,⁷¹ holding that “configuration generator configured to generate,” a “system builder configured to build,” and a “simulation verification environment configured to verify” were purely functional recitations involving no known structures, and the claims were unpatentable on two different grounds: (1) failure to disclose corresponding structure in the specification, assuming that the claims were interpreted as means-plus-format clauses;⁷² and (2) following *Miyazaki*, purely “functional” claiming without any recitation of specific structure.⁷³ According to the Board, “In contrast to the claim in *Swinehart*, Appellants’ claim recites no

⁶⁵ *Id.* at *14.

⁶⁶ 520 F.3d 1367 (Fed. Cir. 2008).

⁶⁷ *Id.* at 1375.

⁶⁸ *American Med. Sys., Inc. v. Laser Peripherals, LLC*, 712 F.Supp.2d 885, 910 (D. Minn. 2010) (rejecting a “purely functional” invalidity attack on the claims).

⁶⁹ 439 F.2d 210 (CCPA 1971).

⁷⁰ *Id.* at 213.

⁷¹ 92 USPQ2d 1395, 2009 WL 3756279 (B.P.A.I. 2009).

⁷² 92 USPQ2d at 1406.

⁷³ *Id.* at 1409-11.

meaningful structure. *Instead, the scope of the functional claim language of claim 1 is so broad and sweeping that it includes all structures or means that can perform the function.*⁷⁴

Although the Federal Circuit has not yet addressed this specific issue – i.e., whether “functional claiming” without any recitation of recognized structures renders a claim invalid or unpatentable – patent applicants would be well-advised to steer clear of apparatus claims that recite little or no recognized structural elements while reciting functions.⁷⁵ At least before the PTO, such claims are unlikely to make it out into the real world.

CONCLUSION

Until the Federal Circuit provides more guidance as to whether there are any limits to “functional” claiming, patent applicants and litigants should keep in mind several basic principles when drafting or asserting claims involving functional language.

First, the enablement requirement may impose limits to overly-broad functional claiming. As set forth in the hypothetical claim at the beginning of this paper, for example, claiming a machine solely by reciting the functions it performs without reciting any structural elements may run afoul of that requirement. Adding dependent claims with varying levels of structural detail may provide a fall-back validity position for aggressive functional claiming strategies.

Second, when prosecuting applications before the PTO, it may be more difficult to procure patents involving “functional” elements unless at least *some* structural elements are claimed in combination with the functions. And the structural elements must correspond to recognized or known structures, not generic elements that have no corresponding real-world meaning.

Third, when drafting functional limitations in combination with structural features, care should be taken to avoid running afoul of the *IPXL Holdings* case, which was found to improperly mix an apparatus claim with a method of using the apparatus.

Finally, while means-plus-function claiming is generally beyond the scope of this paper, single-means claims are still not permitted under controlling precedent and should be avoided. Because claim limitations that omit the word “means” nevertheless may be interpreted as a means-plus-function limitation,⁷⁶ care should be taken to avoid inadvertently drafting such a claim.

⁷⁴ *Id.* at 1409.

⁷⁵ Whether a particular element is a recognized structural element or not can, of course, be fact-specific. *See*, e.g., *The Chamberlain Group, Inc. v. Lear Corp.*, 2010 WL 4884448 at *34 (N.D. Ill. Nov. 24, 2010) (rejecting the argument that “generator” is a means-plus-function element and distinguishing *Ex Parte Rodriguez*).

⁷⁶ *See*, e.g., *Massachusetts Institute of Technology v. Abacus Software*, 462 F.3d 1344 (Fed. Cir. 2006) (“colorant selection mechanism” deemed to be a means-plus-function limitation).