FUNCTIONAL CLAIMING AND THE PATENT BALANCE

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ABSTRACT

If someone were to tell you that fax machines, remote printers, and even email were all patented as far back as 1840—and by a single inventor—you probably would not believe it. Indeed, you would be in good company; the Supreme Court essentially agreed with that sentiment in a landmark decision in 1853.1 Samuel Morse, best remembered for inventing the telegraph, proved that even great inventors are susceptible to claiming inventions that far exceed their actual contributions to the knowledge pool. The Court, in otherwise upholding Morse’s claims to telegraph technology, invalidated his claim to all “use of . . . electro-magnetism, however developed, for marking or printing intelligible characters, signs, or letters, at any distances . . .”—a claim that would cover each of the above-listed modern technologies, and many more.

The rejection of Morse’s overbroad claim demonstrated the Supreme Court’s general aversion to unbounded patents, and a specific wariness toward functional claiming—the practice of describing an invention according to what it does rather than what it is. The central premise of the patent system, and the key to its operability as an innovation engine, is balance. The public foregoes short term benefits offered by immediate exploitation of an invention in exchange for a more robust knowledge pool—and thus more inventions—in the long term. Crucial to maintaining this balance is ensuring that an inventor is given exclusivity only as to her actual invention. Functional claiming tests this balance.

Unfettered approval of functional claims risks granting exclusivity over not only the new and useful solution to a problem that is disclosed in a patent, but to every means of solving that problem—whether or not known, or even conceivable, to the inventor. And this can be exactly the effect when patents like Morse’s attempt to claim a device so broadly in terms of its function that the function itself—meaning the result caused by operation of the device—is captured by the claim. Where such a claim is afforded patent protection, the inventor obtains a right that is not commensurate with her contribution to the knowledge pool; the public is short-changed in the patent bargain.

A BRIEF INTRODUCTION TO THE WORKINGS OF § 112(F)

Though the practice is accompanied by risk of overbroad protection, functional claiming also confers benefits on the patent system. The statutory provision for functional claiming, § 112(f), plays an important role in maintaining the patent system’s balance. Section 112(f) states:

An element in 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.

Section 112(f) narrows the scope of protection afforded to patentees employing functional claims by limiting the literal scope of the claims to the structure, material, or acts specifically disclosed in the specification. The provision is an acknowledgement of the difficulty with which innovation is articulated; it balances the Patent Act’s requirement of particular and distinct claiming against the inherent limitations of language. Rather than strictly requiring structural language for every element of a claim, patentees are given the opportunity to include “means-plus-function” (or “step-plus-function”) claim elements and claims which utilize functional language read in conjunction with the specification to determine the scope of the claim’s limitations. The alternative—an inflexible requirement that claims exclusively use structural language—could in some cases be so limiting as to eviscerate the system’s incentivizing purpose for certain inventions. A system that rewarded only inventions easily expressed in structural language would discourage investment in vital technologies where functional expression is indispensable.

I. OPPORTUNITIES FOR ABUSE

Problematically, court interpretations of the statutory provision for functional claiming have produced confusion over just how the provision is invoked—or, in some cases, perfunctorily triggered. This confusion in turn has encouraged opportunistic behavior. By using amorphous language that may or

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2. Before passage of the America Invents Act in 2011, this provision was embodied in § 112, paragraph 6. The statutory language in both versions is literally equivalent. For consistency, the provision is referred to throughout by its current statutory reference.
may not be construed as “means-plus-function” by a court, it is possible for a patentee to effectively defer the choice as to whether and how § 112(f) applies until a lawsuit arises—and then elect a stance depending on the circumstances of litigation.³ In this scenario, the drafter will utilize functional language in the patent prosecution phase, leaving the patent examiner to decide whether the language triggers special analysis under § 112(f). If the dubious language goes unchallenged in patent examination, then the claim that issues can subsequently be read on virtually any structure that, through litigation, is found to achieve the claimed function.

For its part, the Federal Circuit has attempted to define rules for the invocation of § 112(f). Traditionally, patentees purposefully availing themselves of the opportunity to use means-plus-function claiming would do so by expressly using the word “means” in the claim element. Thus, the Federal Circuit established a semi-magic word (“means”) whose inclusion in a claim supports a rebuttable presumption that § 112(f) applies, and whose absence supports a rebuttable presumption that § 112(f) does not apply.⁴ The presumptions are rebuttable because courts have recognized the potential to purposefully dodge § 112(f) (or, conversely, be unwittingly trapped by it)⁵ through selective diction.

A common tactic to evade § 112(f)’s reach—or at least preserve an argument for its inapplicability—is the use of so called “nonce” words. N nonce words are substitutes for the word “means” that facially suggest structure but, in fact, merely describe function. The U.S. Patent and Trademark Office (PTO) has supplied a non-exhaustive list of these non-structural, generic placeholders: “mechanism for,” “module for,” “device for,” “unit for,” “component for,” “element for,” “member for,” “apparatus for,” “machine for,” and “system for.”⁶ Apart from the most obvious examples, however, distinguishing a nonce word from a structurally informative word can be a nuanced endeavor. This is because many structural devices take their names from the functions they perform (e.g. “filter,” “brake,” “clamp,” “screwdriver,” “lock,” etc.).⁷ On one level, a screwdriver is merely a “mechanism for” driving screws, but to one skilled in the relevant art, the word “screwdriver” suggests specific structural limitations: though one conceivably could use a hammer to drive a screw, a carpenter would be expected to recognize the difference. Thus, whether or not

⁴ EnOcean GmbH v. Face Int’l Corp., 742 F.3d 955, 958 (Fed. Cir. 2014).
⁵ In Cole v. Kimberly-Clark Corp., the Federal Circuit found the patent’s drafter to be “clearly enamored of the word “means,”” having used the word fourteen times in a single claim. However, the structural language accompanying the elements (i.e. “perforation means”) prevented their meeting the statutory requirements for means-plus-function claiming. 102 F.3d 524, 531 (Fed. Cir. 1996).
⁶ MANUAL OF PATENT EXAMINING PROCEDURE § 2181 (9th ed. 2014).
§ 112(f) will apply—which bears on crucial determinations of validity under the Patent Act’s disclosure, novelty and nonobviousness requirements—depends on whether a person having ordinary skill in the relevant art would recognize a term as providing specific structural guidance or, in the alternative, merely incanting a device’s function.

II. JUDICIAL TREND: MINIMIZATION OF § 112(F)’S APPLICATION

In recent years, courts have demonstrated a formalistic tendency to find § 112(f) inapplicable in the absence of the semi-magic word “means.” The Federal Circuit has stated that the presumption against § 112(f)’s applicability in the word’s absence is “a strong one that is not readily overcome.”8 As the strength of the presumption has solidified, there is a risk that the Federal Circuit, in its pursuit of predictability, has exalted form over substance and invited drafting gamesmanship antithetical to the purpose of § 112(f).

In 2014’s EnOcean GmbH v. Face International Corp., the Federal Circuit found the term “receiver” to have a structural meaning distinct from a functional term that appeared elsewhere in the claims that, linguistically, is strikingly similar: “means for receiving.”9 The court held that a person of skill in the relevant art would read structural limitations into the term “receiver” as used in the phrases “receiver for receiving” (or “receiver adapted to receiving”) radiofrequency signals, thereby removing the claim from § 112(f)’s domain. The opinion relied on precedent to state that disputed terms need not be limited to a single structure in order to be sufficiently structural to evade § 112(f), so long as the relevant class of structures conforming to a “receiver” is well known by a person of ordinary skill.10 The court did find, on the other hand, that a claim utilizing the term “means of receiving” was a means-plus-function claim, and thus required structural limitations to be detailed in the specification. In finding that requirement satisfied, the court pointed to the specification’s description of “a typical scenario” in which the frequency is “received by a single receiver.”11 Thus, the word “receiver” was found not only to convey sufficient structure for the purposes of escaping § 112(f) when appearing in the claims, but so structurally informative as to sufficiently limit a mean-plus-function claim when appearing in the specification. The Federal Circuit put substantial stock into the absence of the word “means,” finding extrinsic evidence and expert testimony persuasive despite an unavoidably overt linguistic similarity between “receiver” and “means of receiving.”

The court also afforded substantial weight to the absence of the word

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10. Id. at 960 (quoting Linear Tech. Corp. v. Impala Linear Corp., 379 F.3d 1311, 1322 (Fed.Cir.2004)).
11. Id. at 961.
“means” in 2013’s *Power Integrations, Inc. v. Fairchild Semiconductor International, Inc.* The disputed claim included the language “a soft start circuit that provides a signal...”—a term that the court admitted entailed a “broad class of structures” but found nonetheless to escape the purview of § 112(f). The court reasoned that the straightforwardness of the circuit’s function weighed heavily in favor of finding sufficient structure to avoid the interpretive strictures of means-plus-function claiming. Yet this determination of functional straightforwardness apparently was not crucial to the decision. The court also refused to apply § 112(f) to another use of the term “soft start circuit” despite acknowledging that its “function description [was] less illuminating” than in the previous claim. While it cited other justifications, the dominant thrust of the court’s logic was clearly a strong aversion to applying § 112(f) in the absence of the word “means.” The result: a claim term having no intrinsic meaning beyond the function described, with no requirement enforced to provide structural clarity through the specification.

In 2012’s *Flo Healthcare Solutions, LLC v. Kappos*, the Federal Circuit demonstrated that the presumption against § 112(f)’s applicability to claims lacking the word “means” is strong enough even to overcome the use of terms characteristically recognized as nonce words. The case centered on the term “height adjustment mechanism.” Both parties agreed that the term pointed to a means-plus-function claim (the parties’ disagreement involved whether the specification provided sufficient structural limitations to support the means-plus-function claim’s validity). Nevertheless, despite the parties’ agreement regarding the claim’s functional nature, the Federal Circuit found that the term did not invoke § 112(f) in the first place. The court noted that when the claim drafter has not “signaled his intent to invoke [§ 112(f)] by using the term ‘means,’” the court will not find a means-plus-function claim unless the limitation “essentially is devoid of anything that can be construed as structure.” The court relied on the surrounding language and found that the noun “adjustment” (as defined in the Random House Dictionary) modified the more generic “mechanism” to imbue it with sufficient structure and escape § 112(f). The court went on to equate the term “height adjustment mechanism” to other devices that take their names from the functions they perform, as enumerated in *Greenberg*. The argument that a “height adjustment mechanism” designates structure to a similar extent as do the terms “clamp” and “screwdriver” is tenuous at best. Other characteristic nonce words recently found by the Federal Circuit and district courts to be sufficiently modified as to

12. 711 F.3d 1348 (Fed. Cir. 2013).
13. Id. at 1365.
14. Id.
15. Id. at 1366.
17. Id. at 1374 (emphasis added).
18. Id.

In recent years, instances in which the Federal Circuit has found a means-plus-function claim in the absence of “means” language have been exceedingly rare.29 And there is scant guidance from the bench on how the presumption against applying § 112(f) in such absence is to be overcome. 2008’s Welker Bearing Co. v. PHD, Inc. provided some insight into the threshold for overcoming the presumption.30 The claim at issue included as an element “a mechanism for moving” a finger along a straight line.31 The court noted the particularly synonymous relationship between the words “means” and “mechanism” and further noted that “no adjective endows the claimed ‘mechanism’ with a physical or structural component.”32 The court described the “unadorned term” as “simply a nonce word” and even suggested modifiers that would have moved the claim out of § 112(f)’s reach: “finger displacement mechanism,” “lateral projection/retraction mechanism,” or “clamping finger actuator.”33

In 2013’s Regents of the University of Minnesota v. AGA Medical Corp., the portion of a claim reading “a self-expanding structure exhibiting a spring-like behavioural [sic] component for moving the member between a compressed orientation … and an expanded orientation” was upheld as a means-plus-function element, even though it was “not drafted in standard...
means-plus-function language.”\textsuperscript{34} But the Federal Circuit declined to articulate what factors contributed to overcoming the presumption against functional claiming, instead simply noting the trial court’s determination—and the parties’ agreement—that § 112(f) applied.

2014 saw two Federal Circuit decisions that reveal tension within the court concerning the strength of the presumption against applying § 112(f) in the absence of “means.” In \textit{Robert Bosch, LLC v. Snap-On, Inc.}, the earlier of the two decisions, Judges Prost, Taranto, and Hughes unanimously ruled for § 112(f)’s applicability to the claim terms “program recognition device” and “program loading device.”\textsuperscript{35} The opinion cited precedent identifying “device” as a nonce word and further noted that the surrounding words failed to offer any structural guidance, but rather merely identified the functions to be performed by the device. The court distinguished the “devices” at issue in \textit{Bosch} from precedential “devices” found to avoid invocation of § 112(f) based on the presence of structural language in dependent claims and the specification of the latter that the court found lacking in the former.

Subsequently, in \textit{Williamson v. Citrix Online, LLC}, Judges Moore and Linn, over the dissent of Judge Reyna, reestablished the high bar for overcoming the presumption that \textit{Bosch} appeared to have lowered. Central to the majority and minority opinions was the extent to which adjectival modifiers might remove otherwise purely functional language from the reach of § 112(f). In overruling the finding of a means-plus-function claim despite the absence of “means” language, the majority pointed to the district court’s focus on the word “module” and failure to consider the expression “distributed learning control module” as a whole.\textsuperscript{36} The dissent conceded that the presence of modifiers can change the meaning of a claimed nonce word, but argued that the modifiers in this case failed to provide any structural significance to the nonce word “module.”\textsuperscript{37} Remarkably, the majority went as far as to suggest that the word “module” (almost universally recognized as a nonce word) might itself carry structural meaning, citing as error the district court’s failure to appreciate “the structure-connoting meaning of the word ‘module’ reflected in dictionaries.”\textsuperscript{38}

The majority opinion seemed to deemphasize what previously would be a compelling argument for interpreting a claim as means-plus-function in the absence of the word “means”: substantial reliance on nonce words. The drafting takeaway from recent Federal Circuit case development is that the court seems

\textsuperscript{34} 717 F.3d 929, 940–41 (Fed. Cir. 2013).
\textsuperscript{35} 769 F.3d 1094, 1096 (Fed. Cir. 2014). The court also found the presumption for § 112(f)’s applicability to a claim based on the presence of the word “means” where that word was used in the phrase “by means of” as opposed to the “classic phrase ‘means for.’” \textit{Id.}
\textsuperscript{36} Williamson v. Citrix Online, 770 F.3d 1371, 1378–79 (Fed. Cir. 2014) (emphasis added).
\textsuperscript{37} \textit{Id.} at 1383.
\textsuperscript{38} \textit{Id.} at 1379–80.
willing to forgive virtually any borderline functional language so long as the word “means” is nowhere to be found and, when utilized, nonce words are not wholly unmodified. Dicta in Williamson suggests that now even naked nonce words may find sanctuary from § 112(f)—if only the right dictionary can be produced.

III. THE RISKS FROM RESTRICTIVE APPLICATION OF § 112(f)

The Federal Circuit’s strong resistance to applying § 112(f) without abundantly clear indication of the drafter’s intent to invoke functional claiming does provide a measure of adjudicatory predictability. But what is gained in terms of courtroom predictability must be juxtaposed against what is lost in the practice of invention: cognizable boundaries. Because structural limitations from the specification are not read into the claim in situations where § 112(f) does not apply, other innovators operating in the same space as those making ambiguously functional claims are forced to struggle to define the outer bounds of these minimally structural claim elements. Amorphous functional language will necessarily sustain a penumbra surrounding the structural limitations of the claimed invention. As such, through borderline functional claiming, some may achieve protections that outweigh their actual contributions to the knowledge pool. The result is to discourage investment in neighboring technology that otherwise might have significantly greater appeal. By punting on close-call claims, the Federal Circuit is simply risk-shifting. When a claim escapes the scope of § 112(f), the burden of interpreting the ambiguity—and the risk of misinterpretation—falls on other innovators.

IV. CONFORMING BORDERLINE CASES TO PATENT NORMS

The key to avoiding damage from functional language disguised as structural language is dutiful application of concurrent patent validity doctrines. Thus, when a “receiver” is found to be sufficiently structural to avoid treatment as a means-plus-function claim, it is vital that written description, enablement, novelty, and nonobviousness analysis be performed rigorously on the claim. As to novelty and non-obviousness, any reference containing a “receiver” should be deemed prior art covering the applicable claim element under § 102 or § 103. If no detail is provided in the claim to specify how the “receiver” integrates with other elements of the claim, any analysis under § 103 should give all due respect to KSR International Co. v. Teleflex Inc.39 in permitting combination of the “receiver” reference with other prior art.

Equally important to reining in the disruptive potential of amorphous functional language is rigorous enforcement of the § 112 disclosure requirements. Requiring that an inventor enable her invention strips amorphous

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functional language of much of its pernicious potential. A broadly claimed “receiver” must be supported by a written description sufficient to enable an artisan to make and use the claimed subject matter employing any receiver. Were Morse allowed in his time under modern-day § 112(f) to claim all use of electromagnetic means for printing at a distance—covering not only telegraphic communications, but also modern technology such as email—his claim would nonetheless fail for lack of enablement. He would have enabled one species of electromagnetic means for printing at distance (the telegraph) but not the entire genus.

Courts must also vigorously apply the § 112 requirement of claim definiteness. Prior to Nautilus, Inc. v. Biosig Instruments, Inc.,40 many borderline cases evaded strict scrutiny under claim definiteness doctrine due to the liberal “insolubly ambiguous” standard adhered to by the Federal Circuit.41 But since the Supreme Court’s ruling on the “insolubly ambiguous” standard, in the future, merely referencing a class of structures—as the Federal Circuit has found apparent nonce words to do—without meaningfully disclosing the structural limitations of that class is less likely to withstand the new higher standard of claim definiteness. After Nautilus, claims having multiple meanings are invalid if the specification fails to inform, with reasonable certainty, one skilled in the art of the scope of the invention.42 The claim definiteness doctrine has suddenly become a powerful antidote to uncertainty surrounding the outer borders of claims. If applied cogently to functional language disguised as structural, the doctrine could sap the opportunistic drafting tactic of its power.

CONCLUSION

The enduring challenge of the patent system is maintaining its balance. This requires carefully calibrated adjustments to compensate for rules that can create obstacles to obtaining patents for worthy inventions, as well as to close loopholes that permit oversized protections. Congress’s decision in 1952 to expressly allow functional claiming, and to retain it in 2011, demonstrates a commitment to removing a linguistic impediment to patenting. But the evolution of means-plus-function claiming, and the opportunity for drafting that essentially skirts § 112(f) while retaining the practical benefits of functional language, demonstrates that recalibration is in order. Fortunately, the proper remedy does not require new legislation or even new judge-made doctrine. The PTO and the federal courts can protect the patent system’s balance through routine application of extant patent validity doctrine.

Allowing nonce words and otherwise purely functional claims to evade

41. See, e.g., Exxon Research & Eng’g Co. v. United States, 265 F.3d 1371, 1373 (Fed. Cir. 2001).
42. See generally Nautilus, 134 S. Ct. 2120.
§ 112(f)’s reach is bad policy, and adjudicators should be vigilant in this regard. But by closely adhering to the precepts of novelty, nonobviousness, and disclosure doctrine, the PTO and the courts can address the risk of amorphous functional language. When §§ 102, 103, and 112 are smoothly interoperating within the patent system, amorphous functional claiming will find no safe refuge from a strong, balanced patent system.