

INTERPRETATION OF PATENT PROCESS CLAIMS IN LIGHT OF THE NARROWING EFFECT OF 35 U.S.C. § 112(6)

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INTRODUCTION

The scope of coverage of a patent is likely one of the most important and controversial aspects of modern intellectual property law. This Note will generally address patent claims which use functional language in an attempt to broaden their scope of coverage. Furthermore, this Note will specifically analyze the scope of protection which will likely be imparted to highly functional process (or method) claims¹ in light of the language contained in the Patent Act of 1952² and recent decisions handed down from the United States Court of Appeals for the Federal Circuit (“Federal Circuit”).

An element of a functional claim is described in terms of what it does rather

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1. See *infra* note 14 and accompanying text (for a discussion regarding process and method claims and the inherent relationship between them).

2. Ch. 950, 66 Stat. 792 (1952) (codified as amended at 35 U.S.C. § 1-376 (1994)).

than by its physical structure.³ Many patent practitioners use functional language in an attempt to broaden a patent's scope of coverage through what is commonly referred to as "means-plus-function" and "step-plus-function" claim formats.⁴ Title 35, section 112, paragraph six ("§ 112(6)") of the United States Code sanctions the use of functional language in the expression of an element in a combination claim⁵ through either of the two formats.⁶

As functional language could be written broadly enough to encompass every existing and future structure capable of performing a claimed function, § 112(6) places statutory limits on the breadth of functional claims.⁷ Specifically, the scope of functional claims expressed in the "means" or "step" formats will be limited to the "structure, material, or acts described in the specification and the equivalents thereof."⁸ Consequently, a functional patent claim falling within the purview of § 112(6) cannot be read independently from the rest of the patent. Instead, it must be narrowly construed in light of that which is disclosed in the patent's specification.⁹

Although § 112(6) has been in existence since 1952,¹⁰ the United States Patent and Trademark Office ("USPTO") had never applied paragraph six during the prosecution stage¹¹ of a patent prior to 1994. This led to considerable

3. Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1, 9 (1946).

4. For example, a claim element which states "a means for attaching part A to part B" would theoretically cover any and all structures or materials which could be used to attach the two parts. The "means" used would cover nails, screws, glue, weld, or even magnetism and still be within the claim's scope of protection. Similarly, a claim which states "a step for cooling mixture A until it reaches a semi-solid state" would theoretically cover any process or method for cooling the mixture including refrigeration, induction cooling, etc. The Federal Circuit has already placed limitations on the scope of means-plus-function language, but has remained largely silent regarding the limits to be placed on functional process claims.

5. See *infra* notes 146-47 and accompanying text (for a discussion regarding the requirements for a combination claim).

6. 35 U.S.C. § 112 (1994). Step-plus-function language is used extensively in the description of process claims and its allowance under paragraph six will be discussed throughout this Note.

7. Absent the statutory limitations placed on functional language, entire fields of products and processes could be monopolized by a patent holder. The conflicting policies regarding both broad and narrow claim interpretation are discussed *infra* in note 29. See also *Valmont Industries, Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039, 1042 (Fed. Cir. 1993) (citing *Johnston v. IVAC, Corp.*, 885 F.2d 1574, 1580) (Fed. Cir. 1989) (In expressing the potential "threat" posed by functional claim language, the court stated that "[a] claim limitation described as a means for performing a function, if read literally, could encompass any conceivable means for performing the function.").

8. 35 U.S.C. § 112 (1994).

9. See *infra* notes 16-20 and accompanying text (discussion regarding the statutory requirements of the specification section of a patent).

10. The citation for the current language found in paragraph six of § 112 was the original text of § 112(3) as contained in the 1952 Patent Act.

11. The prosecution of a patent generally involves submission of a written application to the

confusion among judges and practitioners alike regarding the scope of protection to be given a patent expressed in functional claim language. Ultimately, the Federal Circuit, via the *In re Donaldson*¹² decision, mandated that the USPTO apply § 112(6) to all means-plus-function claims during patent prosecution.¹³ This landmark decision ended speculation regarding the scope of protection allowable under this type of claim format.

Although *In re Donaldson* was explicit regarding the scope of means claims, it made no direct reference to the step-plus-function language used extensively in process claims. Hence, a new area of confusion has arisen from a statute which is seemingly very clear on its face. As a process patent claim¹⁴ is, by definition, a functional claim, and its elements are essentially expressed in terms of a combination of “steps,” there would appear to be very little question regarding whether this type of claim falls within the grasp of § 112(6).¹⁵ Nonetheless, there have been no judicial decisions, either before or after *In re Donaldson*, which have interpreted the precise meaning behind the “step-plus-function” language as it appears in the statute.

Thus, the questions that naturally arise are: (1) “Does the narrowing effect of § 112(6) apply to process claims employing functional language?” and if so, (2) “What types of process claims are covered by § 112(6), and under what circumstances will their scope of protection be diminished?” This Note analyzes these questions and suggests how the Federal Circuit might rule in this yet unsettled area of intellectual property law.

I. BACKGROUND INFORMATION ON PATENTS AND PATENT CLAIMS

The analysis of a patent claim’s scope of protection requires the understanding of a few basic principles of patent law. Additionally, in order to differentiate between the linguistic styles used in the drafting of functional claim

USPTO (in fulfillment of the requirements of 35 U.S.C. § 111) and an initial examination of the application by the USPTO to determine patentability (35 U.S.C. § 131). See 35 U.S.C. §§ 111, 131 (1994). If the application is disallowed, the applicant can either argue why the application is patentable under current law or can amend or correct the patent application to conform with the demands of the USPTO. *Id.* § 251.

12. 16 F.3d 1189 (Fed. Cir. 1994).

13. *Id.* at 1193.

14. The terms “process claim” and “method claim” are essentially synonymous and will be used interchangeably throughout this Note. See *In re Chatfield*, 191 U.S.P.Q. 730, 737 (C.C.P.A. 1976) (Rich, J., dissenting) (method is the equivalent of process by statutory definition). A process claim is essentially a combination of steps performed either wholly by a machine or a person or partly in combination.

15. Section 112 states that a claim element can be described in terms of a “step” for achieving a desired function, thus implying that process claims fall within the realm of the statute. Likewise, the additional language of “without the recital of . . . acts in support thereof” indicates the same conclusion due to the close relationship between the terms “acts” and “step.” 35 U.S.C. § 112 (1994) (emphasis added).

language, the basic structure of the two primary types of patent claims must be generally understood.¹⁶ Accordingly, this section provides general background information regarding the various elements which comprise a patent and the types of claims commonly used in the drafting of a patent application.

The structure of a patent includes two primary elements. First, the disclosure section (the "specification") contains a clear, written description of the invention and the preferred method contemplated by the inventor on how the invention will be performed or carried out.¹⁷ Second, the claims of a patent, typically following the specification, are generally written broadly in an attempt to gain expansive protection over the invention.¹⁸ In contrast, as a valid patent need only disclose a single version of the claimed invention,¹⁹ the specification is often written quite narrowly. The narrow drafting of the specification is usually of little concern to the practitioner because the language within the claims normally defines the scope of patent protection.²⁰ Courts have generally agreed with the proposition that claims are not limited by what is disclosed in a patent's specification.²¹

Nonetheless, in some cases, the specification does place limitations on the scope of protection offered by the claims of a patent. When functional language is used to draft broad, all-encompassing claims, the provisions of the Patent Act step in and restrict the scope of coverage to that which is disclosed in the specification and its equivalents.²² This exception to the general rule and its application in determining the scope of process claims are the focal point of this Note. As the issues surrounding the application of § 112(6) primarily revolve around which *types* of functional claims fall within the realm of paragraph six,

16. The "apparatus claim" has been defined as "a mechanical device or combination of mechanical powers and devices" *Corning v. Burden*, 56 U.S. 252, 267 (1853). The "process claim" has been characterized as "a mode or treatment of certain material to produce a given result." *Cochrane v. Deener*, 94 U.S. 780, 788 (1876). See *infra* notes 23-25 and accompanying text (for additional definition of apparatus and process claims).

17. 35 U.S.C. § 112 (1994). The disclosure section also contains any drawings or illustrations necessary to more clearly convey the elements of the invention and how it is made or used.

18. *Id.* Technically, the claims section concludes the specification, but it is a well accepted notion that the specification and the claims are treated as separate elements of a patent.

19. *Id.* The single version of the invention is often referred to as the "preferred embodiment" or the "best mode" and is written in specific, narrow language including details relating to the elements of the invention as well as how it will be made and/or used.

20. See generally ROBERT L. HARMON, *PATENTS AND THE FEDERAL CIRCUIT* 13 (1994) (a patent's claims are not limited to the details recited in the specification nor to the best mode of operation).

21. See *Sjolund v. Musland*, 847 F.2d 1573, 1582 (Fed. Cir. 1988) (the specification section of a patent does not place limitations on its claims); *Texas Instruments, Inc. v. United States Int'l Trade Comm'n*, 805 F.2d 1558, 1562 (Fed. Cir. 1986) (the specification need not include every variation of the invention and the claims should not be read narrowly in light of a narrowly written specification).

22. 35 U.S.C. § 112 (1994).

the precise language of the statute is closely examined to determine under what circumstances it will apply.

The types of claims which may be used in the drafting of a patent are statutorily defined by patentable classes of inventions. These allowable classes include “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.”²³ The term “process” is further defined by the Patent Act as a “process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.”²⁴ Accordingly, the two principal types of patent claims permitted in the United States are the apparatus claim and the process claim.²⁵ The apparatus claim is directed to machines, articles of manufacture, or other compositions of matter, whereas the process claim covers new uses or methods relating to a known process or apparatus.

As a general rule, practitioners draft patent claims as expansive as possible in order to obtain maximum protection for their clients.²⁶ If claim language is drafted broadly and interpreted in a like manner, the patent will preclude competitors from making, using, or selling the specific embodiment of the product or process.²⁷ More importantly, the patent will also offer protection against all expected and unanticipated equivalents.²⁸ However, if the language of a claim is written and interpreted narrowly, patent protection will be limited. The patent’s commercial value will be minimal as the narrowly drafted claim will offer competitors ample opportunity to design around or “reverse engineer” the claimed product or process. Since a patent holder’s goal is to obtain maximum protection and preclude others from exploiting his invention, he would prefer to see the claims of his patent interpreted very broadly. Conversely, the patentee’s competitors would like to make, use, or sell devices similar to the concept enveloped by the patent and would prefer a much narrower interpretation of the patent’s claims. Consequently, the USPTO and the Federal Circuit must balance the interests of both the patentee and the competitor when making policy decisions regarding the scope of patent claims.²⁹

23. *Id.* § 101.

24. *Id.* § 100(b).

25. Practitioners also use other claim formats such as the “product by process” claim, the “kit” claim, and the “Jepson” and “Markush” claims.

26. See generally ROBERT C. FABER, *The Winning Mechanical Claim*, FIFTH ANNUAL PATENT PROSECUTION WORKSHOP: ADVANCED CLAIM AND AMENDMENT WRITING 231, 249-90 (1995) (explaining the process of how to draft broad patent claims with an emphasis on the drafting of mechanical apparatus claims).

27. 35 U.S.C. § 154 (1994).

28. *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605 (1950) (establishing the tripartite test for equivalency); see *infra* note 45 (for additional case law concerning the doctrine of equivalents).

29. There are conflicting policy concerns regarding how much protection should be imparted to patent claims. On one hand, there is a need to grant the patentee sufficient protection to avoid situations which make it exceedingly easy to “design around” the patent. Under a policy of narrow

In an attempt to expand a patent's scope of coverage, functional claim language is frequently used to broadly define an apparatus or process.³⁰ An apparatus claim may be expressed in terms of "means-plus-function" language, describing what the particular apparatus does rather than reciting its physical structure.³¹ Likewise, a process or method is usually expressed in terms of a "step-plus-function," specifically reciting the primary function of each process step. This type of claim is commonly used to describe the operation or result of a previously recited claim element.³² The scope of protection offered by functional language may seem broad on the face of the claim, but the coverage realized may be quite limited. This "narrowing effect" on a patent's scope and its applicability to functional process claims will be discussed in greater detail throughout the remainder of this Note.

II. HISTORICAL DEVELOPMENT OF THE USE OF FUNCTIONAL LANGUAGE IN PATENT CLAIMS AND THE RESULTING ENACTMENT OF 35 U.S.C. § 112(6)

Prior to the enactment of § 112(6) in 1952, there were several conflicting opinions among the federal courts as to whether functional language in a patent claim should even be allowed. Decisions ranged from treating functional claims

claim interpretation, there is little incentive for corporations to spend large amounts of capital on research and development projects if they are not allowed a limited monopoly on the invention for the period of time necessary to recoup their expenditures. In contrast, there is a conflicting concern that if patent claims are interpreted too broadly, there will be reduced incentive for industry to continue the development of existing, patented technology. Under a policy of broad claim interpretation, there is limited motivation for competitors (and arguably the patentee) to make advancements/improvements to products situated in fields which are already heavily patented; thus stifling the continued growth of technology. *See generally* Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 843 (1990) (a summary of the problems associated with the scope imparted to patent claims and the effects of a broadly interpreted patent on the advancement of technology in a particular industry); Rafael X. Zahraiddin, *The Effect of Broad Patent Scope on the Competitiveness of United States Industry*, 17 Del. J. Corp. L. 949 (1942) (a survey of the semiconductor and software industries and how their economic development is significantly impeded by the broad interpretation of patent claims).

30. Practitioners have historically used functional claim language with the expectation that, during litigation, they would be able to argue that the claim literally covered any means or step for performing the specified function (either known or unknown at the time of filing the patent application). The applicant's claim was essentially a "moving target" during an infringement action because it could either be narrowed or broadened depending on the argument set forth by the opponent.

31. *See supra* notes 3-4 and accompanying text. Under certain circumstances, applicants attempting to patent pre-existing technology functioning in a new and unique way may have no other alternative but to draft claims in functional language.

32. *See supra* note 4 (for an example illustrating this proposition).

as “void”³³ to upholding them as being “definite”³⁴ as well as several other variations in between.³⁵

The disarray among the federal courts ultimately resulted in the 1946 Supreme Court decision of *Halliburton Oil Well Cementing Co. v. Walker*.³⁶ The Court ended the inconsistent treatment of functional claims by holding that such language was fatally indefinite and void when used to describe “the most crucial element” of a combination claim.³⁷ The Court feared that claim language describing what an element did, instead of specifically identifying what it was, might be overbroad and ambiguous.³⁸ Instead of placing defined limits on the scope of functional claims,³⁹ thereby making them more definite, the Court chose to eliminate them from patent law altogether if used to describe a claim’s primary component.⁴⁰

The ruling set out in *Halliburton* was later applied in several decisions. Most notably, the court in *In re Fullam*⁴¹ held that the USPTO properly rejected certain patent claims as being “functional in claiming merely the desired result well known to and sought after by workers skilled in the art.”⁴² The court rationalized the rejection by stating that the article in question was defined “not in terms of

33. *Tyden v. Ohio Table Co.*, 152 F. 183, 185 (6th Cir. 1907) (holding that a functional claim “cannot be upheld and must be found void”); *see also* *General Elec. Co. v. Wabash Appliance Corp.*, 304 U.S. 364, 368 (1938) (a claim written in functional language was void as being too indefinite).

34. *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405 (1908) (upholding a functional combination claim which contained the specific elements of a “means for operating the forming plate” and a “means to cause said plate to oscillate” in combination with other elements).

35. *See, e.g.,* *Mead Johnson & Co. v. Hillman’s Inc.*, 135 F.2d 955, 958 (7th Cir.) (functional claims can not be used as a means to differentiate over prior art), *cert. denied*, 320 U.S. 752 (1943); *Farmers’ Cooperation Exchange v. Turnbow*, 111 F.2d 728, 732 (9th Cir.) (functional claim language is void if used at the point of novelty), *cert. denied*, 311 U.S. 681 (1940).

36. 329 U.S. 1 (1946).

37. *Id.* at 9. The claim at issue covered a “means for tuning said receiving means to the frequency of echoes from the tubing [coupling] collars to clearly distinguish the echoes from said couplings from each other.” *Id.* n.7. The Court found this claim to be invalid due to the indefiniteness of the means language. *Id.* at 8-9, 12.

38. *Id.* It appears that the Court was primarily concerned with the effect functional claim language would have on the continued development of technology. For example, the Court theorized that functional language would stifle future creativity because “there may be many other devices beyond our present information or indeed our imagination which will perform that function and yet fit these claims” and that without the perceived hindrance of functional language, “inventive genius may evolve many more devices to accomplish the same purpose.” *Id.* at 12; *see supra* note 29 (for a discussion of the conflicting policy concerns regarding a patent’s scope of coverage).

39. Six years subsequent to *Halliburton*, Congress placed such limitations on the scope of functional claims through the enactment of paragraph six of 35 U.S.C. § 112.

40. *Halliburton*, 329 U.S. at 9.

41. 161 F.2d 247 (C.C.P.A. 1947).

42. *Id.* at 250.

what it is, but of what it does.”⁴³ The sentiment in the courts prior to the enactment of the Patent Act was that “[c]laims directed merely to a ‘desired result’ have long been considered objectionable primarily because they cover any means which anyone may ever discover of producing the result.”⁴⁴

In response to *Halliburton* and the uncertainty surrounding functional claim language prior to this landmark decision, Congress enacted 35 U.S.C. § 112(6) authorizing the expression of a claim element in terms of a means or step for performing a specific function. Specifically, the statute states:

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 corresponding structure, material, or acts described in the specification and equivalents⁴⁵ thereof.⁴⁶

When Congress enacted the statute, it overruled the Supreme Court by sanctioning the use of broad and indefinite means or step-plus-function language. However, there was a “catch” built into the statute that placed a limitation on the scope of protection which would be imparted to functional claim language.

The first clause of paragraph six allows an element within a combination claim to be expressed in terms of a means or step for performing a specific function without having to expressly recite the structure, material or acts which perform the function.⁴⁷ This portion of the statute contains the language which overruled *Halliburton* by allowing claim elements to be expressed in purely functional terms. Congress’ inclusion of the second clause of paragraph six indicates that they, like the Supreme Court, had concern over the broadness and ambiguity surrounding functional language. While a functional claim need not recite the structure, material or acts for performing the specified function, the

43. *Id.* at 249. (citing *General Elec. Co. v. Wabash Appliance Corp.*, 304 U.S. 364 (1938)). In *General Electric*, the Supreme Court condemned the convenient use of functional language at the exact point of novelty. *Id.* at 371.

44. *In re Fuetterer*, 138 U.S.P.Q. 217, 221 (C.C.P.A. 1963); *see also* *O’Reilly v. Morse*, 15 How. 62 (1853); *Heidbrink v. McKesson*, 290 F. 665 (1923).

45. The test for equivalency is beyond the scope of this Note, however, the following cases have dealt with the issue in great detail: *Valmont Indus., Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039 (Fed. Cir. 1993) (establishing the “insubstantial change” test and its applicability to § 112); *In re Bond*, 910 F.2d 1039 (Fed. Cir. 1990) (further defining the term “equivalents”); *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931 (Fed. Cir. 1987), *cert. denied*, 485 U.S. 961 (1988) (the term “equivalents” as used in § 112 was distinguished from the equitable doctrine of equivalents); *P.M. Palumbo v. Don-Joy Co.*, 762 F.2d 969 (Fed. Cir. 1985) (*Graver Tank* equivalency test is applicable to § 112); *Graver Tank & Mfg. Co.*, 339 U.S. 605 (1950) (establishing the tripartite test for equivalency). *See generally* Craig Wallace, *A Proposed Standard Jury Instruction for a Patent Infringement Inquiry Under the Doctrine of Equivalents*, 10 Santa Clara Computer & High Tech. L.J. 425, 456 (1994).

46. 35 U.S.C. § 112 (1994).

47. *D.M.I. Inc. v. Deere & Co.*, 755 F.2d 1570, 1574 (Fed. Cir. 1985).

second clause mandates that such claims be construed to cover only the corresponding structure, material or acts *described in the specification* and their equivalents.⁴⁸ Consequently, the later portion of the statute drastically restricts the broad scope of protection offered by the former.

III. FEDERAL DECISIONS INTERPRETING 35 U.S.C. § 112(6)

Although there have been many federal decisions interpreting § 112(6) since its enactment,⁴⁹ the past decade has produced few Federal Circuit cases illustrating the “narrowing effect” of the statute.⁵⁰ Likewise, there have been a limited number of decisions addressing the circumstances under which § 112(6) will apply.⁵¹ Ultimately, the judicial decisions of the past four decades have culminated into a handful of recent Federal Circuit en banc opinions which now largely define this area of patent law.

The first of the relatively recent Federal Circuit decisions to interpret the scope of “means-for”⁵² language with respect to § 112(6) was *Carrol Touch, Inc. v. Electro Mechanical Systems Inc.*⁵³ In a patent infringement context, the court held that “[i]n order to meet a means-plus-function limitation, an accused device must (1) perform the identical function recited in the means limitation and (2) perform that function using the structure disclosed in the specification or an equivalent structure.”⁵⁴ Consequently, the Federal Circuit narrowed the protection afforded “means-for” language in cases involving patent infringement.⁵⁵ The court did so by judicially requiring what § 112(6) had legislatively mandated over forty years earlier.⁵⁶ Namely, the scope of a functional means claim must be limited to the “structure, material, or acts

48. *Valmont Industries*, 983 F.2d at 1042 (emphasis added).

49. See generally WOODCOCK, PATENT ACT OF 1952—TEN YEARS OF INTERPRETATION: SECTION 112, 157 (1962) (an analysis of case law interpreting paragraph six of § 112 throughout the initial ten years subsequent to enactment of the Patent Act in 1952).

50. See *Jonsson v. Stanley Works*, 903 F.2d 812, 819 (Fed. Cir. 1990) (citing the *Johnston* holding); *Johnston v. IVAC Corp.*, 885 F.2d 1574, 1580 (Fed. Cir. 1989) (discussing how paragraph six “cuts back” on the types of means which can literally satisfy functional claim language); *Data Line Corp. v. Micro Technologies, Inc.*, 813 F.2d 1196, 1201 (Fed. Cir. 1987) (addressing the restrictive nature of paragraph six); *Pennwalt*, 833 F.2d at 934.

51. See *Arrhythmia Research Tech., Inc. v. Corazonix Corp.*, 958 F.2d 1053 (Fed. Cir. 1992); *In re Iwahashi*, 888 F.2d 1370, 1375 (Fed. Cir. 1990) (an apparatus claim covering data processing equipment for voice recognition expressed in means-plus-function language was upheld under paragraph six); *In re Bernhart*, 417 F.2d 1395, 1399 (C.C.P.A. 1969) (a mechanical drawing apparatus expressed in “means” form was allowed under paragraph six of § 112).

52. The phrase “means-for” is synonymous with the phrase “means-plus-function” and both will be used interchangeably throughout this Note.

53. 27 U.S.P.Q. 2d 1836 (Fed. Cir. 1993).

54. *Id.* at 1840.

55. *Id.*

56. *Id.*; see *Valmont Indus., Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039 (Fed. Cir. 1993).

described in the specification and equivalents thereof.”⁵⁷

In 1994, the Federal Circuit, sitting en banc, buttressed its opinion regarding the use of functional claim language. The decisions of *In re Alappat*⁵⁸ and *In re Donaldson*⁵⁹ outline the present state of patent law with respect to functional apparatus claims and how they must be interpreted in infringement actions and during the prosecution of a patent.⁶⁰

The *Alappat* decision involved a patent claim for a device used to sample an incoming electrical signal frequency and record the resulting data which would ultimately be used to produce a visual waveform.⁶¹ The claim specifically covered a means for looking up memory locations in a table created by the resulting data in order to display the data as a smooth line.⁶² Following a heated conflict between the USPTO and the Board of Patent Appeals,⁶³ the Federal Circuit held that the “means for” claim was sanctioned by § 112(6) and, accordingly, its scope of coverage was limited to the structures disclosed in the specification and their equivalents.⁶⁴ Every judge on the Federal Circuit agreed that the Board had erred in not applying the limiting effect of paragraph six to the claim at issue.⁶⁵

The court in *In re Donaldson* similarly ruled that the narrowing effect of § 112(6) must be applied by the USPTO during the patent prosecution stage to claims employing means-plus-function language.⁶⁶ This decision put an end to the USPTO’s long standing practice of refusing to apply § 112(6) during the patent examination process.⁶⁷ The Federal Circuit, sitting en banc, mandated that

57. 35 U.S.C. § 112 (1994).

58. 33 F.3d 1526 (Fed. Cir. 1994).

59. 16 F.3d 1189 (Fed. Cir. 1994).

60. See *infra* notes 66-69 and accompanying text (discussion regarding how *In re Donaldson* required the USPTO to apply paragraph six during patent prosecution).

61. 33 F.3d at 1551-52.

62. *Id.* at 1552.

63. The USPTO initially refused to depart from its prior practice of not applying the narrowing effect of paragraph six of § 112 during the prosecution stage of a patent. In order to more strongly assert its position, the Commissioner of the USPTO appointed himself and four other senior officials to the Board of Appeals to rehear the case of *Ex Parte Alappat*. 23 U.S.P.Q.2d 1340 (Bd. Pat. App. & Interferences 1992). The Commissioner’s attempt to “stack the court” only served to escalate the long-standing disagreement between the USPTO and the Board of Appeals. *Id.* at 1347 (original three-member board expressed considerable indignation toward the “expanded” board’s majority opinion).

64. *Alappat*, 33 F.3d at 1540.

65. *Id.*

66. 16 F.3d 1189, 1193 (Fed. Cir. 1994). The patent application related to an industrial air-filtering device (i.e. dust collector) which included a claim element covering “a lowermost portion . . . arranged and constructed for the collection of particulate matter, said portion having means . . . for moving particulate matter in a downward direction to a bottommost point . . .” *Id.* at 1191 (emphasis added).

67. Prior to the *In re Donaldson* decision, it was common practice for the USPTO to

a means-plus-function claim limitation be interpreted by the USPTO in accordance with § 112(6).⁶⁸ The court firmly stated that “[p]er our holding, ‘the broadest reasonable interpretation’ that an examiner may give means-plus-function language is that statutorily mandated in paragraph six. Accordingly, the PTO may not disregard the structure disclosed in the specification corresponding to such language when rendering a patentability determination.”⁶⁹

While *Alappat* and *In re Donaldson* may have cleared up any confusion and ambiguity surrounding means-plus-function claim language, they were noticeably silent as to claims employing step-plus-function language (which would seemingly be covered under the same statutory provision).⁷⁰ In light of this fact, guidance regarding how process claims are to be treated under § 112(6) can only be derived from perceived Congressional intent and analogous case law construing functional apparatus claims.

IV. ANALYSIS OF PROCESS CLAIMS IN LIGHT OF THE NARROWING EFFECT OF 35 U.S.C. § 112(6)

Although the application of § 112(6) to process claims may seem straightforward in light of the expressed provisions of the statute,⁷¹ there have been no Federal Circuit decisions which have directly addressed this unsettled area of patent law.⁷² The Sixth Circuit has, however, expressed its viewpoint

disregard paragraph six of § 112 during the prosecution of a means-plus-function claim. This enabled the USPTO to reject a claim without having to examine the structures disclosed in the specification and compare them to prior recited art. This anomaly in the law with respect to the differing treatment of functional claims during prosecution and actions of infringement was the primary catalyst behind the *In re Donaldson* decision. *Id.* at 1194.

68. *Id.* at 1193. The court also noted that its holding did not conflict with the general principle that claims are to be given their “broadest reasonable interpretation” during the prosecution of a patent. *Id.* at 1194 (quoting *In re Prater*, 415 F.2d 1393, 1404-05 (C.C.P.A. 1969)). Interestingly, the court noted that *Prater* distinguished the process claims at issue from other apparatus claims contained in the patent because the apparatus claims used “typical means-plus-function language as expressly permitted by the third paragraph [now sixth] of 35 U.S.C. § 112.” *Id.* at 1195 n.6. It is unclear whether *In re Donaldson* was in general agreement with the policy of treating apparatus and process claims differently under paragraph six or whether the court was simply pointing out a flaw in the *Prater* opinion.

69. *Id.* at 1194-95.

70. Recall that means-plus-function language generally applies to apparatus claims, whereas step-plus-function language is commonly used in the drafting of process/method claims. *See supra* notes 4, 23-25 and accompanying text.

71. “An element in a claim . . . may be expressed as a . . . step for performing a specified function.” 35 U.S.C. § 112 (1994).

72. Professor Irving Kayton, a prominent scholar in the field of patent law, has expressly stated that “it is fundamental that nearly all steps recited in process claims fall within this provision of the Patent Statute.” IRVING KAYTON, DETAILS OF HOW TO DRAFT CLAIMS FOR MACHINES, ARTICLES OF MANUFACTURE, METHODS AND COMPOSITIONS OF MATTER, 10-1, 10-29, (Irving

regarding this largely undecided question in *Noll v. O.M. Scott & Sons Co.*⁷³ The court found that the following method claim for crabgrass control fell within the grasp of § 112(6): the step of applying a substance to crabgrass including a chemical “in a concentration and amount sufficient to destroy crabgrass but insufficient to destroy material quantities of the useful grasses and plants.”⁷⁴ The court’s decision was primarily based on the fact that the claim was expressed in terms of a “step” (applying a substance to crabgrass) for “performing a specified function” (to destroy crabgrass but not the useful grasses and plants).⁷⁵

In *Arrhythmia Research Technology, Inc. v. Corazonix Corp.*,⁷⁶ a patent claim covered a method for analyzing an EKG as well as an apparatus used to perform the analysis.⁷⁷ The apparatus elements were held to fall under paragraph six because they were expressed in typical means-plus-function language.⁷⁸ Curiously, the court failed to mention how the statute’s treatment of method claims differed from that of apparatus claims.⁷⁹ The court did, however, expressly indicate that the “claimed steps of ‘converting,’ ‘applying,’ ‘determining,’ and ‘comparing’ are physical process steps”⁸⁰ While specific guidance on how to identify a functional process claim was lacking, *Arrhythmia* at least provided several examples of the types of process steps the Federal Circuit considers to fall within the domain of § 112(6).

Similarly, there have been a handful of federal opinions which have had ample opportunity to expound upon the application of paragraph six to a process or method claim, but chose instead to remain silent. In 1969, the Court of Customs and Patent Appeals distinguished a process claim from an apparatus claim on the basis that the apparatus claim used “typical means-plus-function language” permitted under § 112(6).⁸¹ This distinction was later referenced in *In re Donaldson*,⁸² but the Federal Circuit maintained a neutral position regarding its validity.⁸³

Most recently, in *Greenberg v. Ethicon Endo-Surgery, Inc.*,⁸⁴ the Federal

Kayton & Karol S. Kayton eds., 5th ed. 1993). However, the accuracy of this statement is somewhat suspect due to the dearth of federal decisions regarding the application of paragraph six of § 112 to process claims.

73. 467 F.2d 295 (6th Cir. 1972), *cert. denied*, 411 U.S. 965 (1973).

74. *Id.* at 298.

75. *Id.* at 300.

76. 958 F.2d 1053 (Fed. Cir. 1992).

77. *Id.* at 1055.

78. *Id.* at 1060.

79. *Id.* at 1058-61.

80. *Id.* at 1059.

81. *In re Prater*, 415 F.2d at 1406. *But see In re Angstadt*, 537 F.2d 498 (C.C.P.A. 1976) (Although not directly addressing the issue, the court recognized that functional method claim language may also be sanctioned under paragraph six.).

82. 16 F.3d 1189 (Fed. Cir. 1994).

83. *Id.* at 1195 n.6; *see supra* note 68.

84. 91 F.3d 1580 (Fed. Cir. 1996).

Circuit implied that claims reciting the phrase “step for” would likely invoke paragraph six. The court stated that “[c]laim drafters conventionally use the preface ‘means for’ (or ‘step for’) when they intend to invoke section 112(6).”⁸⁵ While it appears that at least *some* federal courts have found process/method claims to fall within the purview of § 112(6), application of the statute has been sporadic and far from universal. In order to gain a better understanding of when § 112(6) is applicable to process claims and how it should be applied, the following areas will now be examined: Congressional intent behind passage of the statute, the past opinions and views of a prominent Federal Circuit judge, the USPTO’s revised patent examination guidelines, and a detailed statutory interpretation of paragraph six including all applicable federal case law.

A. Congressional Intent Behind the Enactment of 35 U.S.C. § 112(6)

Perceived Congressional intent is often relied upon by courts to give meaning to a statute which has never been judicially interpreted. Although frequently used as a means for statutory interpretation, indications of intent can be very difficult to locate and even harder to evaluate. One of the best sources for determining Congressional intent is through direct legislative history.⁸⁶ Alternate methods include looking at the judicial climate just prior to enactment of the statute, investigating Congress’ motive behind the passage of the legislation, and examining off-the-record comments made by congressional members which directly relate to the statute.⁸⁷ All of the aforementioned sources will be examined in order to better understand the intent of Congress in passing paragraph six (then paragraph three) of the 1952 Patent Act.

Unfortunately, the Congressional record relating to the passage of § 112(6) makes no direct reference to the treatment of process claims. However, as stated by an eight-man Patent Office Board of Appeals in *Ex Parte Ball and Hair*,⁸⁸ “the language of [the sixth paragraph] of Section 112 is thought to be so clear as not to require any resort to extrinsic evidence in connection with its interpretation.”⁸⁹ Similarly, the Supreme Court in *Diamond v. Chakrabarty*⁹⁰ established that “courts ‘should not read into the patent laws limitations and conditions which the legislature has not expressed.’”⁹¹ The Federal Circuit approved of this approach in *In re Donaldson*,⁹² stating that “[w]hen statutory interpretation is at issue, the plain and unambiguous meaning of a statute prevails in the absence of clearly

85. *Id.* at 1583 (emphasis added).

86. *See infra* notes 88-94 and accompanying text.

87. *See infra* notes 95-114 and accompanying text.

88. 99 U.S.P.Q. 146 (Bd. App. 1953).

89. *Id.* at 148.

90. 447 U.S. 303 (1990).

91. *Id.* at 308 (quoting *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)).

92. 16 F.3d 1189 (Fed. Cir. 1994).

expressed legislative intent to the contrary.”⁹³ Therefore, in light of the absence of direct legislative history regarding the passage of paragraph six, the literal meaning of its language must serve as the primary guide in determining Congressional intent.⁹⁴

Regarding the judicial climate immediately prior to the enactment of paragraph six, there were several federal decisions which denounced method claims as being overbroad and too “results oriented.” One such decision was the 1944 Supreme Court case of *Universal Oil Products Co. v. Globe Oil & Refining Co.*⁹⁵ *Universal Oil* involved a process patent covering the refining of oil, and specifically addressed why a precise description of each process step is so important when drafting process claims.⁹⁶ First, adequate disclosure of a claimed process is required “to enable one skilled in the art to practice the invention once the [patent] has expired.”⁹⁷ Second, a detailed description is “essential to warn the industry concerned of the precise scope of the [patent].”⁹⁸ The Court was essentially stating that process claims were in general conflict with the policies of the patent system⁹⁹ and would be upheld only if they recited sufficient detail.¹⁰⁰ This viewpoint parallels the language of § 112(6)¹⁰¹ and may have been partially responsible for its enactment.

The Supreme Court’s *Halliburton* decision is universally recognized as the primary catalyst behind Congressional enactment of § 112(6).¹⁰² The motivation behind passage of paragraph six was undoubtedly the Supreme Court’s ruling that prohibited use of means-plus-function language to describe “the most crucial

93. *Id.* at 1192-93; see *Hoechst Aktiengesellschaft v. Quigg*, 917 F.2d 522, 526 (Fed. Cir. 1990); *Mansell v. Mansell*, 490 U.S. 581, 592 (1989).

94. See *infra* Part IV.D for a detailed statutory interpretation of paragraph six as it relates to process claims.

95. 322 U.S. 471 (1944); see also *In re Fuetterer*, 138 U.S.P.Q. 217, 222 n.11 (C.C.P.A. 1963) (noting that it was Congress’ intent to restore the law regarding broad functional language used in combination claims to its state prior to *Halliburton*).

96. *Universal Oil*, 322 U.S. at 484.

97. *Id.*

98. *Id.*

99. The policy of rewarding a patentee with a limited monopoly over his invention encourages public disclosure of newly developed technology and further dissuades the formation of trade secrets. *Id.*

100. *Id.*; see also *General Elec. Co. v. Wabash Appliance Corp.*, 304 U.S. 364, 368 (1938); *Be ne v. Jeantet*, 129 U.S. 683, 685 (1889).

101. The statute states that “an element . . . may be expressed as a . . . step for performing a function without the recital of acts in support thereof, and such claim shall be construed to cover corresponding . . . acts described in the specification and equivalents thereof.” 35 U.S.C. § 112 (1994). The requirement for a “description of corresponding acts” within the specification is likely what the Court was looking for in its demand for a “precise description” of each process step.

102. *In re Donaldson*, 16 F.3d at 1194. See generally Charles J. Zinn, *Commentary on the New Title 35, U.S. Code “Patents,”* 1952 U.S.C.C.A.N. 2507, 2514 (for the proposition that paragraph six of § 112 was intended to address the *Halliburton* holding).

element” of a combination claim.¹⁰³ Specifically, the Court held that:

The language of the claim thus describes this most crucial element in the “new” combination in terms of what it will do rather than in terms of its own physical characteristics or its arrangement in the new combination apparatus. We have held that a claim with such a description of a product is invalid as a violation of [the patent statute].¹⁰⁴

The Court’s motive in holding that means-plus-function language was in violation of the Patent Act was an overwhelming fear that these types of claims were overbroad and ambiguous and that they posed a threat to the established policies and precedents of the patent system.¹⁰⁵

Congress countered the *Halliburton* decision through the passage of § 112(6), reallowing the use of broad means-plus-function claim language. However, the statute provided a standard that limited the reach of such claims and made them more definite.¹⁰⁶ Congress undoubtedly saw some value in functional claim language where the Supreme Court did not, and chose to “[add] language to the Patent Act of 1952 to change the doctrine enunciated in *Halliburton Oil Well Cementing Co. v. Walker*.”¹⁰⁷ This additional statutory language rendered *Halliburton* obsolete.

Congressional intent in passing § 112(6) was thus twofold. Congress chose to save functional claim language from prohibition by the Supreme Court, and at the same time elected to cut back the claim’s scope of coverage to avoid situations where patent protection would be virtually unlimited and indefinite. Although *Halliburton* (and all subsequent decisions interpreting its holding) dealt with apparatus claims employing means-plus-function language, the analysis of Congressional intent would appear to apply equally to process claims using the step-plus-function claim format.

103. *Halliburton*, 329 U.S. at 9; see *supra* note 37 and accompanying text.

104. *Halliburton*, 329 U.S. at 9.

105. *Id.* at 12 (stating that “[u]nder these circumstances the broadness, ambiguity, and overhanging threat of the functional claim of *Walker* became apparent”). Over four decades after *Halliburton* and the subsequent passage of paragraph six of § 112, the Court’s fears were recently recognized as being legitimate. In *Laitram Corp. v. Rexnord, Inc.*, the Federal Circuit acknowledged that “[a]bsent section 112(6), claim language which requires only a means for performing a function might be indefinite.” 939 F.2d 1533, 1536 (Fed. Cir. 1991); see also *Jonsson v. Stanley Works*, 903 F.2d 812, 819 (Fed. Cir. 1990); *Data Line Corp. v. Micro Techs., Inc.*, 813 F.2d 1196, 1201 (Fed. Cir. 1987).

106. The language of paragraph six of § 112 allows a patent applicant to express an element in a combination claim in terms of a means for performing a specified function without recital of structure, material or acts within the claim itself. However, the breadth of a means-plus-function claim is limited by the added stipulation that the applicant must describe some structure, material or act which performs the function somewhere within the patent’s specification.

107. *Valmont Indus., Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039, 1042 (Fed. Cir. 1993); see also *In re Donaldson*, 16 F.3d at 1194 (paragraph six enacted “to statutorily overrule” the *Halliburton* decision).

The intent of the Legislature in passing § 112(6) can also be gleaned from comments (made by members of Congress) directly relating to the statute. An address given by the Hon. Joseph R. Bryson¹⁰⁸ on January 24, 1952,¹⁰⁹ to the Philadelphia Patent Law Association directly addressed the passage of § 112(6), stating in part:

I should like to say a word on the provision in the bill for functional claiming. [H.R. 3760, 82d Cong., 1st Sess., § 112 (1951)] . . . This provision in reality will give statutory sanction to combination claiming as it was understood before the Halliburton decision. *All the elements of a combination now will be able to be claimed in terms of what they do as well as in terms of what they are.*¹¹⁰

This brief comment illustrates that Congress likely intended that *all* elements of a combination claim may be expressed in terms of their intended function, which presumably includes those elements which describe the function of a process or method. Furthermore, if functional process claims are sanctioned by § 112(6), then they must necessarily adhere to the limitations imposed by the statute; namely the “narrowing effect” which limits a patent’s scope of coverage.¹¹¹

Furthermore, P.J. Federico of the USPTO, who was instrumental in the drafting and passage of the 1952 Patent Act, commented that the word “combination” included “not only a combination of mechanical elements, but also a combination of substances in a composition claim, or *steps in a process claim*”¹¹² Although the intent of a non-congressional member is usually irrelevant in cases of statutory interpretation,¹¹³ the viewpoint of a person who had significant and direct input into the actual language of the statute and who

108. Representative Bryson of South Carolina was the Chairman of Subcommittee No. 3 of the Judiciary Committee of the House of Representatives in charge of the legislation that ultimately resulted in the passage of the 1952 Patent Act.

109. Approximately six months prior to President Truman signing the proposed patent bill into law on July 19, 1952.

110. AMERICAN PATENT LAW ASSOCIATION BULLETIN, 45-46 (Feb. 1952) (emphasis and underscore added); see also *In re Fuetterer*, 138 U.S.P.Q. at 222 n.11.

111. Paragraph six limits the scope of process steps to the “acts described in the specification and equivalents thereof.” 35 U.S.C. § 112 (1994).

112. P.J. Federico, *Commentary on the New Patent Act*, 35 U.S.C.A. Vol. 1, 25-26 (1954) (emphasis added); see also *Proposed Revisions and Amendment of the Patent Laws, Preliminary Draft with Notes, January 10, 1950*, Committee in the Judiciary, House of Representatives (1954) (document is commonly referred to as the “Federico Draft” and contains an initial draft of the 1952 Patent Act as well as all pertinent revisionary notes).

113. The court in *In re Donaldson* stated that Federico’s commentary was “not legislative history per se that may be relied upon to indicate Congressional intent,” that the comments “do not suggest that Federico knew of any particular intent by Congress,” and “he was merely stating his personal views.” 16 F.3d at 1194 n.3. But see *Valmont*, 983 F.2d at 1042 (Interestingly, one year prior to *In re Donaldson*, the Federal Circuit relied on Federico’s commentary in interpreting the scope of paragraph six of § 112.).

was instrumental in its passage seems extraordinarily pertinent. In addition, some scholars consider Federico to have been an “agent” of Congress as he was one of only a handful of men responsible for the drafting of the Patent Act.¹¹⁴ Regardless, based on his comments, it is clear that Federico believed process claims to be covered by § 112(6) in addition to mechanical elements expressed in functional claim language.

B. The Views of Federal Circuit Judge Rich

In attempting to predict how a court may rule in an area which has never been litigated, it is helpful to examine the backgrounds of the most influential justices and analyze how their views and opinions may affect the yet undecided judicial issue. In the area of patent law, it is virtually indisputable that Federal Justice Rich is the most respected and influential member¹¹⁵ of the Federal Circuit bench. Most notably, Judge Rich’s involvement in and contributions to the evolution of modern patent law has been recognized by both Congress¹¹⁶ and the Supreme Court.¹¹⁷

As Judge Rich was one of the original drafters of the Patent Act, his views and opinions should carry great weight in the Federal Circuit’s ultimate decision regarding the application of § 112(6) to process claims. A strong indication of Judge Rich’s view on the pending issue was expressed in the 1963 decision of *In re Fuetterer*.¹¹⁸ In deciding a case generally involving the use of means-plus-function language, Judge Rich (writing for the majority) stated that “[t]he word ‘combination’ in this paragraph¹¹⁹ includes . . . ‘steps in a process claim.’”¹²⁰ He went on to add that this view was “fully supported by legislative history.”¹²¹

114. *But see* C. SANDS, SUTHERLAND ON STATUTORY CONSTRUCTION § 49.09 (4th ed. 1984) (rule of implied adoption of agency interpretation does not apply where there is no evidence in the legislative history indicating that Congress’ attention was directed to such interpretation). *See also* General Am. Transp. v. Interstate Commerce Comm., 872 F.2d 1048, 1053 (D.C. Cir. 1989).

115. Judge Rich is well known for his five-year effort to revise the patent statutes. His dedication and expertise in this area of the law ultimately culminated in the passage of the 1952 Patent Act. Following enactment of the Patent Act, Judge Rich was appointed to the Court of Customs and Patent Appeals as the principal interpreter of the new law regarding patents. He was then appointed to his present seat on the Court of Appeals for the Federal Circuit, a position which he has held for over a decade. George E. Frost, *Judge Rich and the 1952 Patent Code—A Retrospective*, 76 JPTOS 343 (1994).

116. The House Committee report referencing passage of the Patent Act specifically identified and paid tribute to Judge Rich and others who “particularly devoted themselves to the work.” *Id.* at 3.

117. *Aro Mfg. Co. v. Convertible Top Replacement*, 377 U.S. 476, 486 n.6 (1964) (referencing the close involvement of Judge Rich in the development of the Patent Act).

118. 138 U.S.P.Q. 217 (C.C.P.A. 1963).

119. Referring to the current language of paragraph six of U.S.C. § 112.

120. *In re Fuetterer*, 138 U.S.P.Q. at 222 (emphasis added).

121. *Id.* Judge Rich was indicating his approval of the statements made by P.J. Federico in

Furthermore, in a 1952 address to the New York Patent Law Association, Judge Rich, in one of the most accurate and important explanations of the new Patent Act,¹²² commented on the applicability of § 112(6) to functional claims. His lecture included the statement that a functional “element *or step* is to be construed—shall be construed (it is mandatory)—to cover the corresponding structure, material *or acts* described in the specification and equivalents thereof.”¹²³ Based on this statement, there is little doubt that Judge Rich’s treatment of a functional process “step” should be identical to that of an apparatus “means.” While Judge Rich may have clearly expressed his view regarding the general applicability of § 112(6) to process claims,¹²⁴ he gave no indication regarding the *types* of process claims that should be covered by the statute. Similarly, this issue has remained unsettled within the Federal Circuit as well.

*C. The Patent and Trademark Office Examination Guidelines
Regarding Process Claims*

Because the USPTO persistently refused to apply § 112(6) during the prosecution stage of a patent, considerable conflict arose between the USPTO and the Federal Circuit.¹²⁵ This forty-two year conflict was largely resolved through the *In re Donaldson* and *Alappat* decisions.¹²⁶

In response to *In re Donaldson*, the USPTO issued revised Examination Guidelines¹²⁷ which announced the Office’s intent to follow the Federal Circuit’s mandate for exercising the provisions of § 112(6) when applicable.¹²⁸ Citing two examples, the USPTO has made it unmistakably clear that they would not only be applying § 112(6) to apparatus claims, but would be applying the provision to process claims as well. Specifically, the USPTO announced that the following types of claim limitations would fall within the scope of § 112(6): “[r]educing the coefficient of friction of the resulting film”¹²⁹ and “[r]aising the pH of the

his commentary regarding the new Patent Act. *See supra* note 112 and accompanying text.

122. Frost, *supra* note 115, at 3 (attesting to the accuracy of this statement).

123. Pennwalt Corp. v. Durand-Whayland, Inc., 833 F.2d 931, 933-34 (Fed. Cir. 1987) (emphasis added).

124. His point of view expressed in both on- and off-the-record comments.

125. *See supra* note 63 and accompanying text (for a discussion regarding a similar conflict between the USPTO and the Board of Patent Appeals).

126. *See supra* notes 58-70 and accompanying text.

127. Charles E. Van Horn, *PTO Notice on Means or Step Plus Function Limitation Under 35 U.S.C. Section 112, 6th Paragraph*, 47 PTCJ 571 (1994).

128. *Id.* at 1. The USPTO stated that “effectively immediately, examiners shall interpret a Section 112, 6th paragraph ‘means *or step* plus function’ limitation in a claim as limited to the specification and corresponding structure, materials or acts described in the specification and equivalents thereof” *Id.* (emphasis added).

129. *In re Roberts*, 470 F.2d 1399, 1400 (C.C.P.A. 1973) (also holding that, in a step-plus-function type claim, recital of a “specific step” is unnecessary to invoke § 112). *Id.* at 1403.

resultant pulp to about 5.0 to precipitate”¹³⁰ Both of these claim formats are typically used in the drafting of process and method claims.

Although the USPTO has not been explicit regarding the type of claim language required to satisfy the requirements of paragraph six, prior case law indicates what they might have in mind.¹³¹ With regard to a process claim, in *Ex Parte Alappat*,¹³² the Patent Office required that a step in a method specifically do something “physical.”¹³³ In *Ex Parte Akamatsu*,¹³⁴ the USPTO implied that method steps must be restricted to certain significant and essential processes.¹³⁵ As neither of these restrictions are expressly contained within the text of paragraph six, it will be up to the Federal Circuit to ultimately determine the exact requirements of the statute.¹³⁶

Additionally, the USPTO indicated which types of apparatus and process claims would be subject to the “narrowing effect” of § 112(6) through comments made in its revised Examination Guidelines.¹³⁷ Although the USPTO guidelines state that there are no “magic words” necessary to invoke paragraph six,¹³⁸ “it must be clear that the element in the claim is set forth, at least in part, by the function it performs as opposed to the specific structure, material, or acts that perform the function.”¹³⁹ It is apparent that the USPTO will not be requiring use of the words “means” or “step” to engage § 112(6), but will merely be looking for language which is truly functional in nature.¹⁴⁰

D. Statutory Interpretation of 35 U.S.C. § 112(6)

In light of the foregoing discussion, there seems to be persuasive evidence

130. *Ex Parte Zimmerley*, 153 U.S.P.Q. 367, 368 (Bd. App. 1966) (holding that § 112 “sanctions functionally defined steps in claims drawn to a combination of steps”). *Id.* at 369.

131. It appears as though the USPTO may be treating the relationship between the terms “step” and “act” in much the same way that the federal courts have been treating the relationship between “means” and “structure.”

132. 33 F.3d 1526 (Bd. Pat. App. & Interferences 1992).

133. *Id.* at 1559. The USPTO questioned whether an algorithm was subject to paragraph six of § 112, primarily pointing to the fact that it was not “applied in any manner to *physical steps*” and that the “claim does not require *physical quantities*.” *Id.* (emphasis added).

134. 22 U.S.P.Q. 2d 1915 (Bd. App. 1992).

135. *Id.* at 1918. The Patent Office argued that “[t]he method claims do not wholly preempt these procedures, but limit their application to *defined process steps*.” *Id.* (emphasis added); *see also* Arrhythmia Research Tech., Inc. v. Corazonix Corp., 958 F.2d 1053, 1059 (Fed. Cir. 1992).

136. See *infra* Part IV.D for a detailed statutory interpretation of paragraph six of § 112 and a prediction on how the Federal Circuit may ultimately interpret the statute’s requirements with regard to process claims.

137. Van Horn, *supra* note 127.

138. *Id.* at 2. Presumably referring to the classical “means for” and “step for” claim language.

139. *Id.*

140. See *infra* notes 173-93 and accompanying text (for a discussion on the requirements of functional claim language).

that paragraph six applies to process claims. While there have been no Federal Circuit decisions expressly stating this conclusion, the original intent of Congress,¹⁴¹ the viewpoint of a prominent Federal Circuit judge,¹⁴² and the revised Examination Guidelines of the USPTO¹⁴³ strongly attest to its accuracy. Although many scholars and practitioners agree with the general proposition that § 112(6) is applicable to functional process language, it is debatable as to what types of process claims fall within its grasp. Just as all functional apparatus claims (using “means-plus-function” language) are not limited by paragraph six,¹⁴⁴ it is quite likely that all functional process claims (which use “step-plus-function” language) do not universally fall within the statute’s coverage.

In order to determine whether § 112(6) is applicable to a process or method claim, each provision of paragraph six must be closely examined. Specifically, the statute provides that “[a]n element in a claim for a combination may be expressed as a . . . step for performing a specified function without the recital of . . . acts in support thereof”¹⁴⁵ A literal reading indicates that four requirements must be satisfied before the statute will apply.

1. *Requirement for a Combination Claim.*—The first requirement of § 112(6) stipulates that the element in question must be part of a “claim for a combination.”¹⁴⁶ With regard to an apparatus claim, a combination requires that the claim recite more than a “single means.”¹⁴⁷ Although never addressed by the federal courts, it seems logical that a process combination claim would, analogously, require more than a “single step.” Therefore, any process claim which recites two or more steps will likely be considered a combination claim and may be subject to paragraph six if the remaining statutory requirements are satisfied.

2. *Expression of a Step For Performing a Specified Function.*—Since the second and third requirements of § 112(6) are somewhat interdependent, they will be analyzed concurrently. Paragraph six states that a claim element may be expressed in terms of a “step”¹⁴⁸ and that this step may be described in terms of a “specified function.”¹⁴⁹ The precise meanings behind the terms “step” and “function” cannot be found in the legislative history of the Patent Act, nor have they ever been expressly defined by the Federal Circuit.¹⁵⁰ In fact, there have

141. See *supra* Part IV.A.

142. See *supra* Part IV.B.

143. See *supra* Part IV.C.

144. See *infra* notes 166-69, 190-93, 206-10, 216-23 and accompanying text.

145. 35 U.S.C. § 112 (1994). For a detailed interpretation of paragraph six of § 112 statutory languages, see LAWRENCE B. GODWIN, *COMPUTER PATENT TRIAL ISSUES*, ch. 13 (1995).

146. 35 U.S.C. § 112 (1994).

147. *In re Hyatt*, 708 F.2d 712, 715 (Fed. Cir. 1983).

148. 35 U.S.C. § 112 (1994).

149. *Id.*

150. Perhaps much of the confusion and ambiguity surrounding functional process claims stems from the lack of sufficient statutory definitions for the terms “step,” “function,” and “acts.” All of the words would seem to have very similar meanings and connotations. As early as 1963,

been only three federal cases in the past thirty years which have shed substantial light on this issue.¹⁵¹

In *Ex Parte Zimmerley*,¹⁵² the Board of Appeals held that an element reciting the language “[r]aising the pH of the resultant pulp to about 5.0 to precipitate dissolved molybdenum as molybdenum trihydroxide”¹⁵³ fell within the grasp of § 112(6).¹⁵⁴ Although never explicitly stated, the Board presumably treated the phrase “raising the pH of the resultant pulp” as the step and the phrase “to precipitate dissolved molybdenum . . .” as the step’s function. In support of its holding, the Board asserted that paragraph six “sanctions functionally defined steps in claims drawn to a combination of steps.”¹⁵⁵

In *In re Roberts*,¹⁵⁶ the Court of Customs and Patent Appeals found that the following claim was expressed in functional language and was sanctioned by paragraph six: “reducing the coefficient of friction of the resulting film to below about 0.40 . . .”¹⁵⁷ As the court did not give a detailed analysis of the reasoning behind its holding, it is difficult to say what portion of the claim was treated as the step and which part was considered the function. While the reduction of the coefficient of friction seems, at least on its face, to be a step in an overall process, there is no function expressed within the claim which is performed by this step.¹⁵⁸ Alternately, the reduction of the coefficient of friction may have been considered the function of the *unexpressed* step of applying a lubricant to the film or mechanically treating the film’s surface to make it smoother (e.g. by sandblasting). Regardless of the rationale used by the court, it found the claim language to fall within § 112(6),¹⁵⁹ thus adding to the uncertainty surrounding process claims and the application of paragraph six.

Although neither *Ex Parte Zimmerley* nor *In re Roberts* used the term “step” within the language of their respective claims, based on prior decisions regarding functional means claims, this does not appear to be necessary to invoke § 112(6). In *Ex Parte Stanley*,¹⁶⁰ the Patent and Trademark Office Board of Appeals held that the term “device” was synonymous with the term “means” and “[a]ccordingly, the term ‘device’ coupled with a function is a proper definition of structure and is therefore within the requirements of 35 U.S.C. § 112, last

lack of definition for the term “functional” was recognized as the primary source of confusion surrounding paragraph six. *In re Fuetterer*, 138 U.S.P.Q. 217, 221 n.9 (C.C.P.A. 1963).

151. One of these cases being the *Noll* decision discussed *supra* in notes 73-75 and accompanying text.

152. 153 U.S.P.Q. 367 (Bd. App. 1966).

153. *Id.* at 368.

154. *Id.* at 369.

155. *Id.*

156. 470 F.2d 1399 (U.S.P.Q. 1973).

157. *Id.* at 1400.

158. See *infra* notes 189-93 and accompanying text (for a discussion regarding the requirement for an expressed function under paragraph six).

159. *Roberts*, 470 F.2d at 1400.

160. 121 U.S.P.Q. 621 (Bd. App. 1958).

paragraph.”¹⁶¹ Apparently, mere replacement of the term “means” with a generic term such as “device” or “element” will not affect the ultimate application of paragraph six. Accordingly, in *Bryan v. Sid W. Richardson, Inc.*,¹⁶² the Fifth Circuit stated that the word “means” or “its equivalent synonyms” could be used interchangeably and the claim would still fall within the domain of paragraph six.¹⁶³ The Ninth Circuit has put forth a similar proposition, indicating that certain generic terminology might meet the requirements of § 112(6) if the terms used are basically substitutes for the term “means.”¹⁶⁴ Even the USPTO has rejected the argument that only the word “means” will invoke the statute.¹⁶⁵

It appears as if the Federal Circuit has retracted somewhat from the general proposition that words other than “means” can be used to invoke § 112(6). In *Greenberg v. Ethicon Endo-Surgery, Inc.*,¹⁶⁶ the court indicated that even though paragraph six does not require use of the word “means” as a triggering mechanism, the term “has come to be so closely associated with ‘means-plus-function’ claiming that it is fair to say that the use of the term ‘means’ (particularly as used in the phrase ‘means for’) generally invokes section 112(6) and that use of a different formulation generally does not.”¹⁶⁷

In what would seemingly be minority opinions, a few federal cases have held that the term “means” *must* be used in order to invoke paragraph six. In *Ex Parte Roggenburk*,¹⁶⁸ use of the term “means” was held to be essential to invoke the statute.¹⁶⁹ At least one commentator, expressing his perspective on the use of

161. *Id.* at 627. The claim specifically called for “a jet driving device so construed and located on the rotor as to drive the rotor at a blade tip speed of the order of 680 to 760 per second.” *Id.* at 622. The court stressed that “[t]he addition of the phrase ‘jet driving’ to the term device merely renders the latter term more definite and specific.” *Id.* at 628.

162. 254 F.2d 191 (5th Cir. 1958).

163. *Id.* at 194; *see also* *Haney v. Timesavers, Inc.*, 29 U.S.P.Q. 2d 1605, 1609 (D. Or. 1993) (holding the term “mechanism” synonymous with the term “means”); *Application of Attwood*, 354 F.2d 365, 374 (C.C.P.A. 1966) (holding that a means-plus-function claim was subject to § 112 and should not have been ignored by the Board below even though the term “means” was not used within the claim).

164. *Kockum Industries, Inc. v. Salem Equipment, Inc.*, 467 F.2d 61 (9th Cir. 1972), *cert. denied*, 411 U.S. 964 (1973) (The phrases “debarking portion” and “log-impactable edge” were found to fall within § 112.).

165. *See* 1162 O.G. 59 n.2 (May 17, 1994).

166. 91 F.3d 1580 (Fed. Cir. 1996).

167. *Id.* at 1584.

168. 172 U.S.P.Q. 82 (Bd. App. 1970).

169. *Id.* (specifically finding that paragraph six “applies expressly only to limitations involving the term ‘means’ and the recitation of a specified function performed by the ‘means’”); *see also* *Technitrol, Inc. v. Control Data Corp.*, 550 F.2d 992, 999 (4th Cir. 1977) (court implied that use of the term “means” within a functional apparatus claim was necessary to be considered a means clause). *But see* *Waterloo Furniture Components, Ltd. v. Haworth, Inc.*, 798 F. Supp. 489, 494 (N.D. Ill. 1992) (holding that “the use of the word ‘means’ in a claim does not as a matter of law refer to an element expressed in means-plus-function form”).

functional language within the area of the mechanical arts, has reached this same conclusion.¹⁷⁰

Just as means-plus-function claims can use language interchangeable with the word “means” and still fall within the confines of § 112(6), it is logical to assume that terms synonymous with “step” can be used in step-plus-function claims and reach the same result.¹⁷¹ Thus, words such as “phase,” “stage,” “procedure,” or any other generic term which conveys the same general meaning can theoretically be used interchangeably with term “step” without effecting the application of paragraph six. If the foregoing statement were not true, it would be exceedingly easy for an applicant to avoid § 112(6) by merely avoiding use of the term “step.” This surely was not the Congressional intent behind passage of the statute.¹⁷²

Similar to the lack of definition for the terms “means” and “step,” there is also ambiguity surrounding the term “function.” There are two primary questions associated with the functional requirement of § 112(6): (1) What terminology is required within the claim to signify a function? and (2) Does a function need to be recited at all?

Although the requirement for a recited function in a step-plus-function claim may seem elementary, identifying the functional element can sometimes be an exceedingly difficult endeavor. The only federal decision which has even remotely dealt with identification of the function within a method claim is *In re Cohn*.¹⁷³ The Court of Customs and Patent Appeals held that a method step, pursuant to § 112(6), can be recited as doing something “until” a particular result occurs, provided the result can be duplicated by a person skilled in the art.¹⁷⁴ The court in *Cohn* seems to be stating the obvious, as most process steps are executed “until” a desired outcome is achieved. However, the court’s holding may alternately stand for the proposition that only those process steps which are truly “result-oriented” and adequately defined within the specification will be subject to the effects of paragraph six.¹⁷⁵ If true, the function of a process claim can best

170. See generally Jeffrey G. Sheldon, “Means” Clauses, in ABA IPL SECTION, 1995 ANNUAL SUMMER CONFERENCE, at 402-04 (1995) (giving examples on how to broaden a claim through the use of generic structural language rather than standard means clauses, e.g., using “a fastener” vs. “means for fastening” or using “a heater” vs. “means for heating”).

171. *In re Roberts* implied that terms synonymous with “step” could be used interchangeably based on the court’s statement that recital of a “specific step” may be unnecessary to invoke paragraph six. 470 F.2d at 1403.

172. See *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1538 (Fed. Cir. 1991) (ruling that it should not approve of a “convenient way of avoiding the express mandate of section 112(6)”).

173. 438 F.2d 989 (C.C.P.A. 1971).

174. *Id.* at 991. The court’s condition that the result must be capable of “duplication by a person skilled in the art” is presumably referencing paragraph six’s specific demand for “acts described in the specification.”

175. For example, the claim “heating solution A until it comes to a boil” is result-oriented, whereas “mixing solution A with solution B” is probably not. Perhaps only those process claims which recite a resulting function directly relating to the process step will fall within the scope of paragraph six of § 112. See *infra* notes 189-93 and accompanying text (for a discussion regarding

be identified by attempting to isolate and define the “result” of the recited process step.

While there has been only one judicial opinion giving insight on how to identify the function of a process claim, there have been numerous cases dealing with identification of the function within an apparatus claim. Probably the most universally used technique for indicating a function is through use of the word “for.”¹⁷⁶ There are, however, other frequently used words or phrases which depict the same meaning as the term “for” including “as to” (or “to”),¹⁷⁷ “which,”¹⁷⁸ or “so that.”¹⁷⁹ As a general rule, a phrase can usually be identified as a function if it depicts “what the [means] *does*, not what it *is* structurally.”¹⁸⁰ A similar rule likely applies to claims expressed in the step-plus-function format.¹⁸¹

While identification of the function in a majority of claims is fairly straightforward, there are cases where the function has been disguised as a simple means clause. For example, in *Ex Parte Klumb*,¹⁸² the phrase “means for printing” was found to be functionally equivalent to “printing means”¹⁸³ and both phrases were held to fall within the purview of § 112(6).¹⁸⁴ The Board asserted that “we see no necessity for construing the statute to require a particular grammatic construction, so long as the modifier of that term specifies a function to be performed.”¹⁸⁵ Accordingly, in *Fairchild Semiconductor Corp. v. Nintendo Co.*,¹⁸⁶ the court implied that use of the term “for” was not essential to trigger the

the statutory requirement for reciting a function).

176. For example, “a valve means for restricting flow”, “a processing means for computing,” or “a sensing means for detecting seat occupancy.” See, e.g., *Intellical Inc. v. Phonometrics, Inc.*, 952 F.2d 1384 (Fed. Cir. 1992). Other words interchangeable with “for” include “whereby” and “thereby.”

177. For example, “a valve means employed as to restrict flow,” “the step of welding to securely fasten two plates together,” or “heating said mixture to form a slurry.” See, e.g., *De Graffenreid v. United States*, 16 U.S.P.Q. 2d 1321 (Ct. Cl. 1990) (holding the phrase “adapted to” to be synonymous with the term “for”); *Ex Parte Stanley*, 121 U.S.P.Q. 621, 627 (Bd. App. 1958).

178. For example, “a valve means which restricts flow” or “the step of heating a fluid which brings the fluid to a boil.”

179. For example, “a valve means used so that flow is restricted.” See, e.g., *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 957 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 835 (1984) (finding functional means language introduced by the phrase “so that” to be covered under paragraph six).

180. *Laitram*, 939 F.2d at 1536.

181. A phrase in a process claim will presumably be considered a function if it depicts what the step *does* instead of merely describing *acts* which further define the step.

182. 159 U.S.P.Q. 694 (Bd. App. 1967).

183. *Id.* at 695 (comparison of the claim formats was made in dicta). The Board also suggested that the phrase “means for latching” was equivalent to “latching means.” *Id.*

184. *Id.*

185. *Id.*

186. 30 U.S.P.Q. 2d 1657 (W.D. Wash. 1994).

narrowing effect of paragraph six.¹⁸⁷ Although never explicitly stated in a judicial opinion, common sense indicates that an applicant should not be able to avoid the effects of § 112(6) by simply disguising the function of a claim in terms of its corresponding means or step.¹⁸⁸

Another issue surrounding the functional requirement of paragraph six deals with the question of whether a function is required at all. The Patent Act clearly sanctions that an element “may be *expressed* as a . . . *step* for performing a *specified function*”¹⁸⁹ However, it is unclear whether the term “expressed” exclusively modifies the term “step,” or if both the “step” and the “specified function” must be dually expressed within the language of the claim. This issue was initially raised in *Waterloo Furniture Components, Ltd. v. Haworth, Inc.*¹⁹⁰ in a means-plus-function context and the Northern District of Illinois held that “the claim language [did] not specify a function”¹⁹¹ and the claim elements were therefore not “means-plus-function elements.”¹⁹² Consequently, the claims were “not subject to the restrictions of 35 U.S.C. § 112, para. 6.”¹⁹³ Hence, it appears that before § 112(6) will take effect, a function, whether it be expressed or implied, must be present within the claim.

3. *Non-Recitation of Supporting Acts.*—The third requirement of paragraph six is actually a negative requisite as it stipulates that a functional process element need *not* recite the acts for performing the specified function. Once again, there have been no federal opinions expressly defining the term “acts,” so decisions interpreting the meaning behind “structure” and “material” must be used as general interpretory guides. Furthermore, as this statutory requirement demands inaction (i.e. lack of recitation of acts in support of the functional claim), if action is in fact taken (i.e. adequate recitation of the acts) paragraph six

187. *Id.* at 1660. The patent at issue covered equipment for a home video game, and specifically claimed a “locking means having a detent” *Id.* The court found the phrase “locking means” to be functional because it referred to “a way for a device to lock.” *Id.*

188. *See supra* note 172 and accompanying text.

189. 35 U.S.C. § 112 (1994) (emphasis added).

190. 798 F. Supp. 489 (N.D. Ill. 1992).

191. *Id.* at 494-95. The claims at issue specifically covered a “first means positioned under said primary support and mounted on said carriage means” and a “second means mounted on said auxiliary support and positioned below the underside thereof.” *Id.* at 491. The court indicated that neither of these claim elements explicitly recited the function of the means, but merely indicated the relative location of the means. *Id.* at 495.

192. *Id.* at 496. The court stated that mere use of the word “means” within a claim “does not as a matter of law refer to an element expressed in means-plus-function form.” *Id.* at 494. The clear implication is that “something else” is required in addition to the means (i.e. an expressed or implied function). *See also* *Ex Parte Klumb*, 159 U.S.P.Q. 694, 695 (Bd. App. 1967) (The Board held that the word “means” in a means-plus-function clause must be followed by functional language in order for paragraph six to apply. Although never explicitly stated, the rationale for this opinion may possibly lie in a statutory interpretation of § 112 which finds the word “expressed” to modify the phrase “specified function” in addition to the term “means.”).

193. *Waterloo*, 798 F. Supp. at 496.

may possibly be rendered inapplicable. The degree or amount of recitation necessary within a process claim to avoid the narrowing effect of paragraph six may also be at issue if acts supporting the process step are not described with sufficient precision and clarity.

The watershed decision regarding the forth requirement of § 112(6) is *Laitram Corp. v. Rexnord, Inc.*¹⁹⁴ The primary issue was whether the patentee's claim recited sufficient structure to avoid the narrowing effect of paragraph six. The claim was expressed in terms of a "means for joining said pluralities [of link ends],"¹⁹⁵ but failed to recite additional structure or material giving further definition to the means used. The claim did, however, further define the *function* accomplished by the means (i.e. joining of the link ends). The Federal Circuit held the claim subject to § 112(6) because "[t]he recitation of some structure in a means plus function element does not preclude the applicability of section 112(6)."¹⁹⁶ The court went on to explain that the structural description in the claim merely served to further specify and define the function of the recited means¹⁹⁷ and that "[t]he recited structure tells only what the means-for-joining *does*, not what it *is* structurally."¹⁹⁸ The court ultimately found paragraph six to apply and the patent's scope of protection was narrowed to cover only the corresponding structure described in the specification (and its equivalents).¹⁹⁹

There are two relevant rules of law to be gleaned from *Laitram*. First, the court defined, albeit vaguely, the amount of recitation of supporting structure, material or acts necessary to avoid application of § 112(6).²⁰⁰ Second, the court determined that the required recitation must further define the means or step, and may not merely give further definition to the function.²⁰¹ Both of these rules outline important aspects of paragraph six and will now be examined in greater detail.

The court in *Laitram* specifically pointed out that "[t]he recitation of *some* structure in a means plus function element does not preclude the applicability of section 112(6)."²⁰² While a precise definition of "some" structure is lacking, the

194. 939 F.2d 1533 (Fed. Cir. 1991).

195. *Id.* at 1535. The claim specifically covered a "means for joining said pluralities of [link ends] to one another so that the axes of said holes of said first plurality are arranged coaxially, the axes of said holes of said second plurality are arranged co-axially and the axes of respective holes of both pluralities of link ends are substantially parallel." *Id.*

196. *Id.* at 1536.

197. *Id.*

198. *Id.* To the contrary, the District Court found that the means-plus-function claim did not fall within paragraph six because it recited sufficient structure. Consequently, the claim was not narrowly construed to cover only the corresponding structure described in the specification. *Id.* 1535-36.

199. *Id.* at 1539. *Laitram*'s patent was narrowly construed in light of paragraph six of § 112 and was therefore found not to be infringed by the Rexnord device. *Id.*

200. *See infra* notes 202-03 and accompanying text.

201. *See infra* notes 204-05 and accompanying text.

202. *Laitram*, 939 F.2d at 1536 (emphasis added).

very fact that the court specified the degree or amount of structure necessary to by-pass paragraph six implies that if sufficient structure *is* recited, the claim will not fall within the realm of the statute.²⁰³ Although *Laitram* dealt with the interpretation of a mean-plus-function claim, its legal analysis should apply equally as well to claims expressed in a step-plus-function format. Accordingly, the recitation of *some* acts in a step-plus-function claim will likely not avoid application of § 112(6). On the other hand, if sufficient acts are recited in support of the functional step, the statute might be held inapplicable.

The court in *Laitram* also noted that although there was recitation of some structure within the means-plus-function claim, it “merely serve[d] to further specify the function of [the] means” and “tells only what the means-for-joining *does*, not what it *is* structurally.”²⁰⁴ The court found that the recitation of structure within the claim defined the structural relationship between the elements comprising the function, but failed to adequately define the means used to accomplish the intended function.²⁰⁵ Thus, what may initially appear to be recitation of structure within a claim may actually be an additional functional statement which will not prevent the application of paragraph six.

In 1996, the Federal Circuit identified terminology which is *inherently descriptive* of structure and would therefore escape the effects of § 112(6). In *Greenberg v. Ethicon Endo-Surgery, Inc.*,²⁰⁶ a patent claim for a surgical instrument provided for a “detent mechanism defining the conjoint rotation of

203. See *Quantum Corp. v. Mountain Computer Inc.*, 5 U.S.P.Q. 2d 1103 (N.D. Cal. 1987). The court held that § 112 was inapplicable because the claim “specifically provides a means to carry out the function” *Id.* at 1106-08. The claim at issue provided for a “correction signal generator means connected to said sample and hold circuit for generating an offset signal for application to said driver means to promote and maintain track centerline alignment.” *Id.* The amount of recited structure was found to be sufficient to remove the claim from § 112. *Id.* But see *Haney v. Timesavers Inc.*, 48 F.2d 1236 (Fed. Cir. 1995) (holding that the following mean-plus-function claim failed to recite “some” structure, thus finding § 112 applicable: “a double-drive mechanism interposed between and connecting the platen and frame, where the double drive mechanism imparts at least one translational orbital movement superimposed on another movement”); *Fairchild Semiconductor Corp. v. Nintendo Co.*, 30 U.S.P.Q. 3d 1657, 1660 (W.D. Wash. 1994) (holding that a claim for a “locking means having a detent for engaging said locking recess of said cartridge means” did not recite sufficient structure because “[w]hile the words of the claim embody some structural description (e.g. ‘a detent’), a person of ordinary skill in the art would read the language as a means element”); *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388-89 (Fed. Cir. 1992) (The court determined that a claim covering a “call cost register means, including a digital display for providing a substantially instantaneous display” did not recite sufficient structure. While “digital display” appears to further define/support the “call cost register means,” the court treated the digital display as being a means in and of itself, therefore requiring further definition of the display means before § 112 could be by-passed.).

204. *Laitram*, 939 F.2d at 1535-36.

205. *Id.*; see *supra* note 195 (for the exact language of the claim).

206. 91 F.3d 1580 (Fed. Cir. 1996).

said shafts”²⁰⁷ The court in *Greenberg* held that this phrase did not constitute means-plus-function language within the meaning of the Patent Act because, although the mechanism was defined in functional terms, the term “detent” (denoting the name for a structure) “has a reasonably well understood meaning in the art.”²⁰⁸ Accordingly, all words used in conjunction with the term “means” might not automatically be in proper means-plus-function format. For example, commonplace structural terms such as “sensor” or “container,” which recite sufficient structure in and of themselves, might avoid application of § 112(6).²⁰⁹ Although the court in *Greenberg* did not elaborate on the rationale behind its holding, it is suspected that it wanted to avoid the requirement that a patent specification become a “catalogue of existing technology.”²¹⁰

As previously discussed, the legal analysis of *Laitram* (interpreting “means-for” language) can reasonably be used to evaluate step-plus-function claims. If the recited “acts” within a process claim merely serve to further specify/define the function of a process “step,” without giving further definition or support to the step itself, application of paragraph six will likely not be avoided. It appears that the only circumstance under which a process claim will side-step the narrowing effect of § 112(6) is when the claim is expressed in language defining the specific acts necessary to accomplish the process step, and not merely a well-defined description of the resulting function.

It is not entirely clear how the *Greenberg* holding will apply to process claims. Presumably, functional process terms which have a “reasonably well understood meaning in the art”²¹¹ may escape the application of paragraph six. For example, process terms such as “drilling” or “welding,” which have meanings generally understood by persons engaged in the mechanical arts, may recite sufficient acts in and of themselves to avoid § 112(6). Conversely, terms such as “sensing”²¹² or “cutting,”²¹³ which call to mind several methods which could be successfully used to satisfy their functional requirement, would likely fall within the scope of the statute.

4. *Corresponding Acts Described in the Specification.*—If all three of the previously discussed requirements of § 112(6) are satisfied, the result will be a

207. *Id.* at 1582.

208. *Id.* at 1583. The term “detent” denotes a generally understood meaning within the mechanical arts. *Id.*

209. The *Greenberg* opinion cited many other devices which take their names from the functions they perform, such as “filter,” “brake,” “clamp,” “screwdriver,” “lock,” and “cutters.” *Id.* Presumably, use of these specific terms in conjunction with typical means-for language would avoid application of paragraph six.

210. Van Horn, *supra* note 127; see also *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986) (patent specification need not teach, and preferably omits, what is well known in the art).

211. *Laitram*, 939 F.2d at 1538.

212. The step of “sensing” can be accomplished in a number of ways, including the use of mechanical switches, infra-red sensors, motion detectors, etc.

213. The step of “cutting” can be accomplished through sawing, torching, by laser, etc.

validly written process claim couched in statutory step-plus-function language. There is, however, an added stipulation that must be satisfied before the claim will be allowed by the USPTO or upheld in a federal court. Despite the sanctioning of qualified process claims under paragraph six, the patent's specification must also be examined to determine if it sufficiently describes corresponding acts for performing the claimed process steps.

The second clause of paragraph six mandates that "such claims shall be construed to cover the corresponding . . . acts described in the specification and equivalents thereof."²¹⁴ Although this clause is ordinarily considered a limitation on the reach of § 112(6), it may alternately be viewed as an additional statutory requirement. If an applicant is successful in satisfying the threshold requirements of the statute, but fails to adequately disclose supporting acts within the specification, the claim will either be disallowed during prosecution²¹⁵ or will be struck down in a patent infringement action.

As with the other statutory elements of § 112(6), judicial interpretation of the second clause of paragraph six has primarily centered around apparatus claims employing means-plus-function language. Once more, these opinions are the Federal Circuit's sole indication on how they might interpret process claims utilizing the step-plus-function format. Most recently, the Federal Circuit expressed its opinion in *In re Donaldson*,²¹⁶ noting that an applicant's failure to adequately disclose structure in the specification may lead to the disallowance of a means-plus-function claim limitation.²¹⁷ The court specifically stated:

If one employs means-plus-function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by that language. If an applicant fails to set forth an adequate disclosure, the applicant has in effect failed to particularly point out and distinctly claim the invention²¹⁸

Presumably, if an applicant uses step-plus-function language in a claim, but fails to sufficiently disclose corresponding acts within the specification which give

214. 35 U.S.C. § 112 (1994).

215. Contrarily, the USPTO has implied that lack of disclosure of structure, material or acts within the specification will *not* prevent the examiner from interpreting the scope of a functional means or step plus-function claim and will not lead to an automatic disallowance. Van Horn, *supra* note 127. Additionally, the USPTO has stated that "[i]f no definition is provided [in the specification], some judgment must be expressed in determining the scope of the limitation." *Id.* It appears that the USPTO may once again be interpreting paragraph six in a manner inconsistent with the view of the Federal Circuit.

216. 16 F.3d 1189 (Fed. Cir. 1994).

217. *Id.* at 1195; *see also In re Hays Microcomputer Products, Inc.*, 982 F.2d 1527 (Fed. Cir. 1992) (holding that the patent's specification adequately disclosed the structure and materials necessary to depict the meaning behind a means for detecting a predetermined sequence of data signals and causing a modem to switch modes of operation, therefore satisfying the requirements of paragraph six).

218. *In re Donaldson*, 16 F.3d at 1195.

further definition to the process step, the claim may be held invalid and unenforceable.²¹⁹

Additionally, in *Texas Instruments v. United States*,²²⁰ the Federal Circuit stipulated that "patentees are required to disclose in the specifications some enabling means for accomplishing the functions set forth in the 'means-plus-function' limitation."²²¹ Likewise, in *Valmont Industries*,²²² the court held that "[t]he applicant must describe in the patent specification some structure which performs the specified function."²²³

The reasoning behind the foregoing decisions seems to be that if federal courts are to apply the second clause of § 112(6) to highly functional claims, there must be specific disclosure which further defines vague and indefinite claim language. Absent sufficient disclosure, the claim's scope of protection will be indeterminate and will not be sufficiently understood and interpreted by the court and, ultimately, by the patentee's competitors.²²⁴ It appears clear that a specification which discloses the corresponding acts of a process step in vague, ambiguous and non-specific terms may, at first glance, seem to provide very broad patent coverage. However, if the final stipulation of paragraph six is not met, there will be a total lack of protection.²²⁵

V. EPILOGUE

Almost forty-five years have passed since the enactment of the 1952 Patent Act. Although the chief purpose of the statute was to clear up confusion and ambiguity surrounding the field of patent law, with regard to 35 U.S.C. § 112(6), this purpose seems to have failed. It is nothing less than remarkable that four and one-half decades have passed without the emergence of judicial guidance concerning how (or if) paragraph six applies to process or method claims. In light of the Federal Circuit's recent interest in functional claim language,²²⁶ it

219. Accordingly, a practitioner drafting a functional process claim would be well advised to adequately describe in the specification, through the use of broad (yet specific) language, the corresponding acts which further define and expound upon the process step at issue.

220. 805 F.2d 1558 (Fed. Cir. 1986).

221. *Id.* at 1564.

222. 983 F.2d 1039 (Fed. Cir. 1993).

223. *Id.* at 1042.

224. If the claims of a patent are unclear, there are two resulting problems which may surface. First, the chance for resulting litigation will likely be increased because neither party is exactly sure where the scope of patent coverage begins and ends. Second, there is the possibility that technology will be stifled due to the broadness and indefiniteness surrounding unspecific claim language. See *supra* note 38 and accompanying text (for a discussion regarding the effect vague claim language may have on the continued development of technology).

225. True functional claims which do not meet every requirement of § 112 are not sanctioned under the Patent Act and will likely be held void for being indefinite.

226. In 1994, the Federal Circuit, sitting en banc, decided the cases of *In re Donaldson* and *In re Alappat*. See *supra* notes 58-70 and accompanying text. Although these decisions cleared

seems imminent that long awaited direction is forthcoming.

Comments and views put forth by Congress, members of the judiciary, and the USPTO all seem to indicate that § 112(6) does in fact apply to step-plus-function language. While there may be universal consensus that paragraph six applies to certain process/method claims, the real question focuses on what types of process claims will be subjected to the statute's "narrowing effect." Due to the dearth of federal decisions directly addressing this issue, identification of the circumstances under which paragraph six will apply is difficult, but not impossible. Guidance as to what constitutes a step-plus-function claim element can be largely derived from a close examination of § 112(6) and an analysis of case law which has already interpreted and construed analogous means-plus-function language.

A close reading of § 112(6) indicates that a patentee is afforded the option of expressing an element in a combination claim in terms of a "step." This would seemingly apply to the type of language typically found in the description of a process or method. Likewise, the statute states that the claim need not recite "acts" in support thereof, also appearing to reference process terminology. The resulting issue then is whether the patentee, through the selection of certain claim language, has chosen to invoke paragraph six. The prudent practitioner must therefore exercise great care in his choice of words. Regardless of whether § 112(6) is intended to be invoked or avoided, the precise definitions and requirements of the terms "step," "function," and "act" must be thoroughly understood. The practitioner must also be conscious of the fact that the location where he recites the details (i.e. the "acts") associated with a process step²²⁷ will have great influence on the ultimate application of paragraph six.²²⁸

Additionally, practitioners must be aware that they can not escape the effects of § 112(6) by simply disguising their process claims in terms of analogous structural language. In light of the fact that virtually any process claim can be easily converted into a look-alike apparatus claim by a skilled practitioner,²²⁹ to limit one format under § 112(6) and not the other would result in a non-uniform rule denoting form without substance. This is surely what the Federal Circuit was referring to when it stated that it should not condone "a convenient way of

up the turmoil and chaos surrounding the use of means-plus-function claim language, they did little to resolve the remaining issues concerning the step-plus-function language used extensively in process claims.

227. The supporting acts of the process step can either be recited in the claim or in the specification.

228. Even after determining that a process claim is couched in language which meets all of the statutory requirements of paragraph six, the statute may still not apply. If the supporting acts which further define the process step are not sufficiently described in the specification, not only will paragraph six of § 112 be inapplicable, the claim will likely be held invalid as being vague and indefinite. Alternately, if the supporting acts are sufficiently described in the claim itself, § 112 will probably not apply.

229. Likewise, most functional apparatus claims can alternately be expressed in means-plus-function language.

avoiding the express mandate of section 112(6)."²³⁰

Consequently, if the foregoing proposition is correct, the result would signify that virtually *all* process claims are theoretically covered under paragraph six. Although the rationale behind this theory seems sound, it is hard to believe that the Federal Circuit would restrict the scope of this commonly used form of claiming to a point where it would no longer make sense to utilize it under any circumstances.²³¹ This is likely not a result the original drafters of the Patent Act envisioned or intended.

CONCLUSION

Now we must await the ultimate decision from the Federal Circuit regarding the fate of process claims. Will the narrowing effect of paragraph six apply to process claims? If the answer is in the affirmative, the result could be thousands of frustrated patent owners who unfortunately claimed their invention in terms of a process or method, and now must face the reality of owning a patent with limited commercial value. An affirmative answer might also lead practitioners to avoid using process and method claims unless they have absolutely no other reasonable choices available to them.²³² Neither of these outcomes are particularly satisfying. On the other hand, if the Federal Circuit concludes that process claims are not covered under paragraph six, how will the court explain the apparent inconsistency in treatment between functional apparatus and process claims in light of a statute which is seemingly very clear on its face?²³³

Hence, it is suggested that the Federal Circuit may attempt to ride the "middle of the road," finding that only purely functional process steps will be subject to being "cut back" by paragraph six. The definition to be given the phrase "purely functional" will no doubt cause the Federal Circuit great distress. Will the definition cover only those process claims which are "result-oriented?" Or, alternately, will it refer to indefinite process steps which fail to be adequately defined by a specific, unambiguous function? Or perhaps it is only those claim

230. *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1538 (Fed. Cir. 1991).

231. As virtually all process claims are, by definition, functional in nature, there would seem to be no way around the effects of paragraph six. This may not be an entirely satisfactory result. At least with the functional apparatus claim, the practitioner has a true choice between using structural or functional language and either invoking or avoiding the effects of § 112. It appears that the practitioner may not enjoy this same luxury when drafting process claims.

232. This would be an unfortunate result as the step-plus-function clause can serve as a convenient way of drafting a claim as broadly as prior art will permit. More importantly, the step-plus-function clause permits the practitioner to draft general expressions and phrases to cover claim elements when generic, structural terminology is unavailable. However, if generic terminology is available, it should be used in lieu of functional claim language to avoid the potential negative ramifications of paragraph six.

233. It is highly unlikely that the Federal Circuit will modify how means-plus-function claims are handled under paragraph six. To do so would be to call into question over four decades of judicial decisions interpreting functional apparatus claims.

elements which appear to broadly cover the ultimate result of a process step, in lieu of setting forth well-defined intermediary steps, which will feel the effect of paragraph six. Each one of these interpretations can legitimately be gleaned from the handful of federal cases which have dealt with this yet undecided issue. Nonetheless, a literal reading of the precise language of § 112(6) does not give a clear indication as to the accuracy of any of the statutory limitations mentioned above.

Thus, the Federal Circuit is faced with a very difficult decision with respect to the future of functional process claims. Regardless of the final outcome, one thing is sure. Virtually every patent attorney will have to re-evaluate their technique for drafting process or method claims (or forego them entirely) to ensure maximum patent protection for their clients.