

# Saint Louis University Public Law Review

---

Volume 20  
Number 2 *Intellectual Property: Policy  
Considerations From a Practitioner's  
Perspective (Volume XX, No. 2)*

Article 11

---

2001

## Indefinite Means-Plus-Function Patent Claims. What Should be the Standard?

James B. Surber

Follow this and additional works at: <https://scholarship.law.slu.edu/plr>



Part of the [Law Commons](#)

---

### Recommended Citation

Surber, James B. (2001) "Indefinite Means-Plus-Function Patent Claims. What Should be the Standard?," *Saint Louis University Public Law Review*. Vol. 20 : No. 2 , Article 11.  
Available at: <https://scholarship.law.slu.edu/plr/vol20/iss2/11>

This Comment is brought to you for free and open access by Scholarship Commons. It has been accepted for inclusion in Saint Louis University Public Law Review by an authorized editor of Scholarship Commons. For more information, please contact [Susie Lee](#).

## INDEFINITE MEANS-PLUS-FUNCTION PATENT CLAIMS. WHAT SHOULD BE THE STANDARD?

### I. INTRODUCTION

A patent is a quasi-contract between an inventor, or group of inventors, and the public.<sup>1</sup> The patentee is awarded the right to exclude others from making, using, and selling the patented invention for a limited period of time.<sup>2</sup> In return, the patentee must teach the invention to the public.<sup>3</sup> Therefore, the patent system awards innovation by providing the patentee exclusive rights to the invention, while simultaneously advancing science by requiring the patentee to teach the invention to the public. In the section known as the “specification,” a patent must teach the invention sufficiently to enable one skilled in the relevant art to practice the invention.<sup>4</sup> The specification concludes with one or more claims particularly pointing out and distinctly claiming the subject matter that the inventor regards as the invention.<sup>5</sup> The patent claims dictate the scope of the invention, and therefore, the scope of rights the patentee has to exclude others from making, using, and selling the invention.<sup>6</sup>

When a patentee asserts his exclusive rights against an alleged infringer, the accused will typically claim the patent is invalid and, in the alternative, that his conduct does not infringe the patent.<sup>7</sup> As a result, patents are often invalidated, or narrowed in scope, during the course of patent litigation.<sup>8</sup> For

---

1. Donald R. Palladino, *The Publication Bar: How Disclosing an Invention to Others Can Jeopardize Potential Patent Rights*, 37 DUQ. L. REV. 353 (1999).

2. 35 U.S.C. § 154 (a)(1)-(2) (2000).

3. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 373 (1996).

4. 35 U.S.C. § 112, P 1 (2000). Section 112, P 1 provides:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

*Id.*

5. 35 U.S.C. § 112, P 2 (2000).

6. *Markman*, 517 U.S. at 373-74.

7. *See, e.g., Union Pacific Resources Co. v. Chesapeake Energy Corp. and Chesapeake Operating, Inc.*, 236 F.3d 684 (Fed. Cir. 2001).

8. *See Jeffrey N. Costakos & Walter E. Zimmerman, Do Your Means Claims Mean What You Meant?*, 1 MARQ. INTELL. PROP. L. REV. 109, 114-116 (1997); *See also* Mark D. Janis,

example, patent claims are frequently invalidated for being indefinite, thus failing to distinctly claim the subject matter that the patent holder regards as his invention in accordance with 35 U.S.C. § 112, P 2 (§ 112, P 2).<sup>9</sup> A patent claim is considered definite when “those skilled in the art would understand the scope of the claim when the claim is read in light of the specification.”<sup>10</sup> More specifically, a claim must clearly indicate to one skilled in the relevant art, when read in light of the specification, what the patentee has claimed as his invention.<sup>11</sup> This way, the public has been put on notice as to what specific subject matter the patentee has exclusive rights.<sup>12</sup>

The invalidity defense has subjected the specification of many patents to scrutiny by the courts during patent infringement litigation. Moreover, this defense has particularly troubled patent holders attempting to assert means-plus-function patent claims against alleged infringers.<sup>13</sup> A means-plus-function patent claim enables an inventor to claim a means of performing a function without explicitly setting forth, in the claim itself, the precise structure (means) that performs the function.<sup>14</sup> Rather, the structure of the corresponding means should be clearly defined in the specification.<sup>15</sup> However, patent holders attempting to assert means-plus-function claims against purported infringers have often failed for one of two reasons. First, defendants have historically been somewhat successful in showing that asserted means-plus-function claims are indefinite, and therefore, invalid under § 112, P 2.<sup>16</sup> Secondly, an accused device is often found to include no structure that is equivalent to the structure that is described in the patent specification corresponding to the asserted means-plus-function claim.<sup>17</sup>

---

*Who's Afraid of Functional Claims? Reforming the Patent Laws § 112, P 6 Jurisprudence*, 15 COMPUTER & HIGH TECH. L.J. 231, 245 (1999).

9. 35 U.S.C. § 112, P 2 (2000). § 112, P 2 provides: “The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.”

10. *North Am. Vaccine, Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 1579 (Fed. Cir. 1993).

11. *Id.* at 1579-80.

12. See Rudolph P. Hofmann, Jr. & Edward P. Heller, *The Rosetta Stone for the Doctrines of Means-Plus-Function Patent Claims*, 23 RUTGERS COMPUTER & TECH. L.J. 227, 241 (1997).

13. See generally Janis, *supra* note 8.

14. 35 U.S.C. § 112, P 6 (2000). § 112, P 6 provides:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

15. *Id.*

16. See Janis, *supra* note 8, at 242.

17. See, e.g., *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 1365 (Fed. Cir. 2000).

In general, courts have often struggled in determining the range of structural equivalents corresponding to means-plus-function claims that should be afforded patent protection.<sup>18</sup> The effect of this confusion has been to limit the scope of means-plus-function patent claims.<sup>19</sup> For these reasons, patent applicants should scrutinize the effectiveness of means-plus-function claims to adequately protect their research investments and valuable intellectual property.

The following will discuss the requirements for a means-plus-function claim to be definite and supported by the specification in accordance with § 112, P 2. First, the discussion will focus on the impact of *Atmel Corp. v. Information Storage Devices, Inc.*,<sup>20</sup> on means-plus-function claims as applied to the requirements of § 112, P 2. In *Atmel*, the Federal Circuit set forth guidelines as to what teachings must be explicitly described in the specification and what teachings can be “incorporated by reference.” In addition, the following will propose a slightly modified set of requirements for a specification to support a means-plus-function claim. This proposal will attempt to simultaneously address the much debated range of structural equivalents that should be afforded protection under means-plus-function claims when asserted against purported infringers.

## II. ATMEL CORPORATION V. INFORMATION STORAGE DEVICES, INC.

### A. Background

In June 1995, Atmel Corporation (hereinafter “Atmel”) filed a complaint in district court alleging that Information Storage Devices, Inc. (“ISD”) was liable for infringing claim 1 of their U.S. Patent 4,511,811 (“the 811 patent”).<sup>21</sup> The 811 patent claims an improved charge pump circuit, which is able to boost applied voltage during programming operations without excessive current

---

18. To determine whether an asserted means-plus-function claim has been infringed, a judge must use a two-step analysis. First, the judge construes the claims to determine their legal effect by identifying structures, materials or acts described in the patent’s specification and their equivalents. Second, the construed claims are compared to the accused device. For literal infringement, the accused device must perform an identical function to the one recited in the means-plus-function claim. In addition, the accused device must utilize the same structure, materials or their equivalents described in the specification to perform the function. *See, e.g.*, *Al-Site Corp. v. VSI Int’l, Inc.*, 174 F.3d 1308, 1320 (Fed. Cir. 1999); *Smiths Industries Medical Systems, Inc. v. Vital Signs, Inc.*, 183 F.3d 1347, 1358 (Fed. Cir. 1999); *See generally* Tobi C. Clinton, *Infringement and Software Claimed Under 35 U.S.C. § 112, P6: Software Function is the Important Part*, 5 VA. J. L. & TECH. 4 (2000).

19. *See generally* Costakos & Zimmerman, *supra* note 8, at 111-116.

20. 198 F.3d 1374 (Fed. Cir. 1999).

21. *Atmel Corp. v. Information Storage Devices, Inc.*, 997 F. Supp. 1210, 1214 (N.D. Cal. 1998).

leakage.<sup>22</sup> In November 1997, ISD moved for summary judgment asserting that claim 1, the only claim of the 811 patent, was indefinite under § 112, P 2.<sup>23</sup> ISD alleged that the specification failed to disclose any structure corresponding to the high-voltage means limitation of claim 1, thus rendering the claim indefinite under § 112, P 2.<sup>24</sup>

The district court first held that the disputed limitation is expressed in means-plus-function format under 35 U.S.C. § 112, P 6 (§ 112, P 6).<sup>25</sup> In the specification, the 811 patent refers to the disputed limitation by stating:

The present invention may include high-voltage generator circuit 34. Known circuit techniques are used to implement high-voltage circuit 34. See On-Chip High-voltage Generation in NMOS Integrated Circuits Using an Improved Voltage Multiplier Technique, IEEE Journal of Solid State Circuits, Vol[.] SC-11, No.3, June 1976. (hereinafter the "Dickson article").<sup>26</sup>

The district court noted that only two other references in the 811 patent describe the high-voltage generator circuit.<sup>27</sup> The references include two figures, which provide no further detail of the electrical components comprising the high-voltage generator circuit and represent the circuit as merely a "black box."<sup>28</sup> The district court found that the high-voltage generating means was limited to those described in the Dickson article.<sup>29</sup> The district court then considered whether incorporating the Dickson article, a non-patent publication, into the specification by reference was acceptable to comply with the provisions of Section 112.

The district court adopted the rule set forth in the Manual of Patent Examining Procedure (MPEP) § 608.01(p).<sup>30</sup> This rule prohibited non-patent documents that are necessary to support the claims, or for adequate disclosure of the invention, (essential material) from being incorporated by reference into

---

22. U.S. Patent 4,511,811.

23. See *Atmel*, 997 F. Supp. at 1214; 35 U.S.C. § 112, P 2 states: "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."

24. *Atmel*, 997 F. Supp. at 1214, 1230.

25. *Atmel*, 997 F. Supp. at 1227; Patent applicants are afforded the option of using the means-plus-function format whenever convenient. However, determining whether an applicant exercised this option is not always clear. The Federal Circuit stated that "if the word 'means' appears in a claim element in combination with a function, it is presumed to be a means-plus-function element." *Al-Site*, 174 F.3d at 1318. This presumption is rebutted, however, if the claim itself recites sufficient structure, material, or acts to perform the claimed function. *Id.*

26. U.S. Patent 4,511,811, col. 4, 11. 56-63.

27. *Atmel*, 997 F. Supp. at 1227.

28. *Id.*

29. *Id.*

30. See *Atmel Corp. v. Information Storage Devices, Inc.*, No. C 95-1987 FMS, 1998 WL 184274, at \*2-\*3 (N.D. Cal. April 14, 1998).

the specification.<sup>31</sup> The district court interpreted such “essential material” to include the structure corresponding to a means-plus-function claim.<sup>32</sup> Therefore, the district court held that the 811 patent improperly incorporated the Dickson article by reference.<sup>33</sup> Furthermore, the district court held that the absence of any structure corresponding to the high-voltage means limitation in the specification rendered the claim invalid as indefinite under § 112, P 2.<sup>34</sup>

The district court rejected Atmel’s argument that the claim should be read in light of the specification as “one skilled in the art” would read the claim to determine whether it was supported by the specification.<sup>35</sup> The district court found that one could not evade the requirements under § 112, P 2 and P 6 simply by stating that one skilled in the art would understand the limited disclosure.<sup>36</sup> For these reasons, the lower court granted summary judgment in favor of ISD.

Atmel appealed the decision of the district court. The appeal focused on two issues: (1) whether the knowledge of one skilled in the art should be considered when determining whether sufficient structure is disclosed in the specification to support a means-plus-function claim and (2) whether referencing a non-patent publication was sufficient to describe a portion of the structure supporting the means-plus-function claim.

#### B. *The Federal Circuit’s Majority Opinion*

In essence, the Federal Circuit held that (1) the knowledge of one skilled in the art must be considered when determining whether sufficient structure is disclosed in the specification to support a means-plus-function claim and (2) that structures corresponding to a means-plus-function claim must be disclosed

---

31. *Id.*; MPEP § 608.01(p) (4th ed., Rev. 8, 1981) was in effect at the time the 811 patent application was filed. This version defined “essential material” as that which is necessary to (1) support the claims, or (2) for adequate disclosure of the invention (35 U.S.C. § 112). The definition set forth in the current version is substantially equivalent:

An application for a patent when filed may incorporate “essential material” by reference to (1) a U.S. patent or (2) a pending U.S. application . . . . “Essential material” is defined as that which is necessary to (1) describe the claimed invention, (2) provide an enabling disclosure of the claimed invention, or (3) describe the best mode (35 U.S.C. § 112). In any application which is to issue as a U.S. patent, essential material may not be incorporated by reference to (1) patents or applications published by foreign countries or a regional patent office, (2) non-patent publications, (3) a U.S. patent or application which itself incorporates “essential material” by reference or (4) a foreign application.

MPEP § 608.01(p) (7th ed., Rev. 1, 2000).

32. *See Atmel*, 1998 WL 184274, at \*3.

33. *Id.*

34. *Id.*

35. *Id.*

36. *Id.* at \*4.

in the specification, i.e., the contents of the Dickson article could not be incorporated by reference.<sup>37</sup>

### 1. The “Skilled in the Art” Standard

The Federal Circuit first addressed the proper standard for determining whether a structure corresponding to a means-plus-function claim has been adequately disclosed. On appeal, Atmel argued that the district court had erred in not considering the knowledge of one skilled in the art in determining whether the high-voltage means limitation was sufficiently definite under § 112, P 2 in light of the description set forth in the specification.<sup>38</sup> ISD responded that the knowledge of one skilled in the art cannot replace an adequate disclosure of the structure in the specification.<sup>39</sup>

The Federal Circuit agreed with Atmel that the knowledge of one skilled in the art should be considered when applying § 112, P 2.<sup>40</sup> The court reasoned, “For purposes of § 112, P 2, it is the disclosure in the specification itself, not the technical form of the disclosure that counts.”<sup>41</sup> The court found that the “one skilled in the art” standard applies with equal force when considering whether a means-plus-function claim is sufficiently definite under § 112, P 2.<sup>42</sup> To support this finding, the court cited *In re Dossel*, which also involved a means-plus-function claim.<sup>43</sup> In *In re Dossel*, the court found that although the word “computer” was never used in the claims or the specification, one “in the medical imaging field” would find it “well within the realm of common experience that computers are used to generate images for display by mathematically processing digital input.”<sup>44</sup> Thus, the *In re Dossel* court found that the means-plus-function claim was sufficiently definite.<sup>45</sup>

The Federal Circuit also reasoned that the “one skilled in the art” standard is used for most other issues relating to patents, such as claim construction, enablement, best mode, and written description.<sup>46</sup> For the above reasons, the court held that interpreting what is disclosed in the specification must be done in light of the knowledge of one skilled in the art.<sup>47</sup>

---

37. *Atmel*, 198 F.3d at 1383.

38. *Id.* at 1378.

39. *Id.*

40. *Id.*

41. *Id.*

42. *Atmel*, 198 F.3d at 1379.

43. *Id.* (citing *In re Dossel*, 115 F.3d 942 (Fed. Cir. 1997)).

44. *In re Dossel*, 115 F.3d at 947.

45. *Id.*

46. *Atmel*, 198 F.3d at 1379-80.

47. *Id.* at 1380.

## 2. Sufficiency of the Disclosure

The court next considered whether there was sufficient disclosure in the specification to support the means-plus-function claim in the 811 patent. Atmel argued that the district court erred in adopting MPEP Section 608.01(p), which prohibited the incorporation of “essential material” by reference to non-patent publications.<sup>48</sup> Furthermore, Atmel argued that the district court erred in holding that the structures described in the Dickson article could not be incorporated by reference into the 811 patent.<sup>49</sup> Atmel contended that to find otherwise would “encourage patentees to include inordinate quantities of written material in the specification for fear of omitting ‘essential material.’”<sup>50</sup> Alternatively, Atmel argued that the 811 patent contained sufficient structural detail just by mentioning the Dickson article.<sup>51</sup> Atmel relied on the testimony of an expert who suggested that the mere title of the Dickson article in the specification was sufficient for one skilled in the art to envision the structure disclosed in that article.<sup>52</sup>

ISD argued that the district court correctly followed MPEP Section 608.01(p) and exempted the structures described in the Dickson article.<sup>53</sup> ISD argued that allowing incorporation by reference would contravene the public notice function of patents by making it nearly impossible for competitors to determine whether they were violating a patent without burdensome reference to extrinsic evidence.<sup>54</sup>

While the Federal Circuit agreed with ISD that the “means” (i.e., a structure) of a means-plus-function claim must appear in the specification, it disagreed that determining whether a means-plus-function claim is definite turned on whether the patentee has “incorporated by reference” the corresponding material.<sup>55</sup> The court held that the test was “first whether the structure is described in the specification, and, if so, whether one skilled in the art would identify the structure from that description.”<sup>56</sup>

The court focused on the language of Section 112 in rejecting the argument that other sources could not be used to define language within the claims. More specifically, the court cited § 112, P 6, which refers to “structure . . . described in the specification and equivalents thereof.”<sup>57</sup> Furthermore, the court stated that “one skilled in the art knows how to make and use a bolt, a

---

48. *Id.*

49. *Id.*

50. *Atmel*, 198 F.3d at 1380.

51. *Id.*

52. *Id.*

53. *Atmel*, 198 F.3d at 1381.

54. *Id.*

55. *Id.*

56. *Id.*

57. *Id.*



wheel, a gear, a transistor, or a known chemical starting material. The specification would be of enormous and unnecessary length if one had to literally reinvent and describe the wheel.”<sup>58</sup>

The court agreed with ISD, however, that the Dickson article could not replace a structural description in the specification.<sup>59</sup> This notwithstanding, the court held that the language of the specification was sufficient to definitively describe the structure of the high-voltage generating circuit.<sup>60</sup> The court relied primarily on the unrebutted expert testimony that claimed the mere title of the Dickson article was “sufficient to indicate to one skilled in the art the precise structure of the means recited in the specification.”<sup>61</sup> Therefore, the court held that the summary judgment in favor of ISD was improper and remanded for further consideration.

### C. *Summary of the Dissenting Opinion*

The dissent reasoned that this decision seemed to ignore the very purpose of “incorporation by reference” and explicitly condoned the use of non-patent material for incorporation into a specification.<sup>62</sup> The dissent condoned the use of “incorporation by reference” for three basic reasons. First, the dissent reasoned that the purpose of “incorporation by reference” is to make one document become a part of another so that it is clear that the cited document is a part of the referencing document.<sup>63</sup> Second, the dissent explained that requiring inventors to include every imaginable detail of a structure corresponding to a claimed means, including those widely understood by persons of ordinary skill in the art, would be the “antithesis of conciseness and would result in exceedingly lengthy patents.”<sup>64</sup> In support of this assertion, the dissent noted the statutory mandate of conciseness.<sup>65</sup>

Lastly, the dissent reasoned that the court’s acknowledgment of the “person skilled in the art” perspective, while refusing to afford “incorporation by reference” the same recognition, is incongruous.<sup>66</sup> The dissent noted that it is acceptable to refer to material not incorporated into the written description by reference, such as dictionaries and material well-known in the art to determine whether the claims are definite because “that which is common and well-known is as if it were written out in the patent and delineated in the

---

58. *Atmel*, 198 F.3d at 1382.

59. *Id.*

60. *Id.*

61. *Id.*

62. *Id.* at 1384.

63. *Id.*

64. *Id.* at 1386.

65. See 35 U.S.C. § 112, P 1 (“The specification shall contain a written description . . . in . . . concise, and exact terms . . .”).

66. *Atmel*, 198 F.3d at 1385.

drawings.”<sup>67</sup> Therefore, the dissent reasoned that it is certainly acceptable to refer to incorporated material, which is obviously a part of the written description.<sup>68</sup> The dissent concluded that, “if those skilled in the art would understand what a ‘high-voltage generating circuit’ is, either by reading the Dickson article or because the circuit is a well-known structure in the art, the claim is definite in accordance with § 112, P 2.”<sup>69</sup>

### III. ANALYSIS

#### A. *A Modified Standard for Sufficient Disclosure*

Whether a claim is definite under § 112, P 2 depends on whether those skilled in the relevant art would understand the scope of the claim when read in light of the specification.<sup>70</sup> The purpose of the specification is to teach the invention to the public in such manner as to enable one skilled in the relevant art to practice the invention.<sup>71</sup> As part of this enabling disclosure, a specification must clearly describe the structures corresponding to a means-plus-function claim.<sup>72</sup> If a specification relied in significant part on non-patent publications incorporated by reference, an undue burden may be imposed on the public to understand what structures correspond to a means-plus-function claim. That is, requiring the public to gather and combine all references used in the specification and synthesize themselves a sufficient disclosure deviates from the intent of patent law to require a patentee to teach the invention in return for the exclusive rights afforded by a patent. However, § 112, P 1 requires applicants to draft the specification in such “full, clear, concise, and exact terms” as to enable persons skilled in the art to practice the invention.<sup>73</sup> Therefore, patent applicants must balance completeness with conciseness.

The U.S. Patent and Trademark Office addressed this balance by adopting the procedure set forth in the MPEP at § 608.01(p), which allows applicants to incorporate “essential material” by reference to (1) a U.S. patent or (2) a pending U.S. application.<sup>74</sup> The MPEP currently defines “essential material” as that which is necessary to (1) describe the claimed invention, (2) provide an enabling disclosure of the claimed invention, or (3) describe the best mode.<sup>75</sup> The MPEP further states that “essential material” “may not be incorporated by

---

67. *Id.* (citing *Loom Co. v. Higgins*, 105 U.S. 580, 586 (1881)).

68. *Atmel*, 198 F.3d at 1385.

69. *Id.*

70. *North Am. Vaccine*, 7 F.3d at 1579.

71. 35 U.S.C. § 112, P 1.

72. 35 U.S.C. § 112, P 6.

73. 35 U.S.C. § 112, P 1.

74. MPEP § 608.01(p) (7th ed., Rev. 1, 2000).

75. *Id.*

reference to . . . non-patent publications,” such as the Dickson article.<sup>76</sup> In *Atmel*, the Federal Circuit upheld the district court’s adoption of MPEP § 608.01(p).<sup>77</sup> The majority then continued to agree with the district court by holding that structures corresponding to a means-plus-function claim under § 112, P 6 must appear in the specification.<sup>78</sup>

The district court and the Federal Circuit, however, seemed to ignore the key issue of whether the high-voltage generating means was in fact “essential material,” thus precluding the incorporation of non-patent publications to describe the structure involved. The district court cites and adopts the definition set forth in § 608.01(p) of the MPEP. However, this definition provides little guidance as to what material is “essential.” As the Federal Circuit held in *Atmel*, whether the description of a structure corresponding to a means-plus-function claim is sufficient to support the claim or provide adequate disclosure of the invention will be determined through the eyes of one skilled in the art. Therefore, in attempt to provide more guidance, it seems logical that the definition of “essential material” should only include that which is necessary to support the claims or to provide adequate disclosure of the invention *for one skilled in the relevant art*.

In *Atmel*, the Federal Circuit arrived to a similar conclusion. However, the reasoning leading to that conclusion was different. First, the Federal Circuit held that the high-voltage generating means (circuit) was “essential material,” and therefore, the corresponding structure must be disclosed in the specification or incorporated by reference to U.S. patents or U.S. patent applications. Since the specification did not explicitly describe the circuit’s structure nor refer to U.S. patents or applications to achieve the same, the Federal Circuit considered whether one skilled in the art would nonetheless find the circuit adequately disclosed in the specification. Fortunately for the patent holder in this case, an expert found the mere title of the Dickson article set forth in the specification was “sufficient to indicate to one skilled in the art the precise structure of the means recited in the specification.”<sup>79</sup> However, the expert’s testimony raises the question of how “essential” was the circuit’s structure to the claimed subject matter if one skilled in the art can envision the circuit’s “precise” structure from the mere title of a journal article?

It seems logically inconsistent that an expert could decipher the precise structure of an electrical circuit, which according to the Federal Circuit constitutes “essential material” as defined in MPEP § 608.01(p), by merely reading the title of a journal article. Perhaps the circuit’s structure, in light of the expert’s testimony, should not have been considered “essential material.”

---

76. *Id.*

77. *Atmel*, 198 F.3d at 1381.

78. *Id.*

79. *Id.* at 1382.

That is, every element or structure corresponding to a mean-plus-function claim should not be considered “essential material” *per se*. Rather, the proper standard should be whether one skilled in the art would require an explicit description of the corresponding structure in the specification itself to understand what the patentee has claimed as his invention. This standard is also consistent with the intent of the MPEP to require a disclosure necessary to support the claims and to provide adequate disclosure of the invention. If the exact structure is not necessary for this understanding, the structure should not have been construed as “essential material.” Therefore, incorporating into the specification a non-patent publication to describe the high-voltage means limitation should have been considered acceptable practice.

Requiring patentees to explicitly describe every structural element or limitation corresponding to a means-plus-function claim in order to comply with MPEP § 608.01(p) undoubtedly facilitates the public’s understanding of what the patent holder has claimed as his invention.<sup>80</sup> However, requiring that “essential material” as defined only by persons skilled in the relevant art to be explicitly described in the specification would not significantly detract from the public’s ability to understand what the patent holder has claimed for two reasons.<sup>81</sup> First, incorporating a non-patent reference into the specification does not make the contents of the same unattainable by the public. In fact, the applicable standard to determine whether an incorporated reference is available to the public appears well settled. That is, if “interested members of the relevant public could obtain the information if they wanted to,” then the reference is publicly available.<sup>82</sup> Secondly, the relevant public that ordinarily will examine another’s patent to determine what the patentee has claimed generally includes only persons skilled in the art. Therefore, requiring that “essential material,” as defined only by persons skilled in the art, be explicitly described in the specification seems to strike a balance between completeness and conciseness.

In contrast, if one skilled in the relevant art determined that an explicit description of certain material was necessary to support a means-plus-function claim or to provide adequate disclosure of the invention, the material should be considered “essential.” In such case, the contents of non-patent references incorporated into a specification to describe that material should not be considered when determining whether the claim is definite under § 112, P 2.

From this point, as the Federal Circuit held in *Atmel*, a court should determine whether one skilled in the art would nonetheless find that sufficient

---

80. The phrase “explicitly describe” is intended to include a written description of a structure corresponding to a means-plus-function claim that is set forth in the specification itself and/or references to U.S. patents and U.S. patent applications.

81. *Id.*

82. *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1569 (Fed. Cir. 1988).

disclosure is present in the specification to support the claimed subject matter. That is, although certain material is considered “essential” thereby precluding reference to non-patent documents incorporated into the specification to describe such “essential material,” sufficient disclosure may still be present to support the claim. As in *Atmel*, the expert determined the mere title of the Dickson article provided sufficient disclosure to support the high-voltage means limitation. In addition to the unique facts of *Atmel*, specifications may include sufficient contextual description of a structure to support the claim. As the court recognized, claims may use language that those skilled in the art understand without the need for explicit, detailed definitions in the written description.<sup>83</sup>

The Federal Circuit has held claims to be definite, for example, where a patent disclosed only a black box to illustrate a digital detector because the specification also referred to “a device that acts to detect the digital signal information in another stream of information.”<sup>84</sup> This description was found to be sufficient in light of the well-known meaning of the term “detector” to those of skill in the electrical arts.<sup>85</sup> The Federal Circuit has also held that a claim reciting a structure “so dimensioned,” where the specification failed to set forth exact dimensions, was definite because “those of ordinary skill in the art realized that the dimensions could be easily obtained.”<sup>86</sup>

In addition, the Federal Circuit held that claims were definite after consulting dictionaries to determine that those of ordinary skill in the art would understand the meaning of the recited phrase, “hydrolyzed carbohydrate,” where the written description failed to define the “hydrolyzed” term.<sup>87</sup> While the foregoing outcomes are certainly possible, if a structure is considered “essential” by persons skilled in the art, it seems likely that the absence of an explicit description of that structure in the specification would expose a patent holder to much risk of having the corresponding claim invalidated under § 112, P 2.

By allowing inventors to incorporate by reference non-patent documents disclosing material deemed non-essential by persons skilled in the art to support a means-plus-function claim, the statutory goal of conciseness is achieved. Furthermore, explicitly describing only “essential material” as defined by persons skilled in the art ensures that inventors adequately teach a

---

83. See, e.g., *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1556-58 (Fed. Cir. 1983) (claims not indefinite because the evidence showed that those skilled in the art understood their scope even though the written description failed to disclose precise definitions of certain terms of art).

84. *Personalized Media Communications, LLC v. International Trade Comm’n*, 161 F.3d 696, 704-07 (Fed. Cir. 1998).

85. *Id.* at 705.

86. *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986).

87. *In re Skoll*, 523 F.2d 1392, 1395-97 (C.C.P.A. 1975).

patented invention and support the claims without undue burden imposed on the public. As the dissenting opinion in *Atmel* states:

The strongest argument for the court's outcome relies on its notion of the better public policy. Arguably, it is more convenient for one reading a patent to construe a means-plus-function limitation without having to refer to another document . . . . Competing with this concern for convenience is the statutory mandate of conciseness. See 35 U.S.C. § 112, P 1 ("The specification shall contain a written description . . . in . . . concise, and exact terms . . ."). . . . In any event, by codifying the requirement of conciseness in section 112, P 1, Congress has expressed its preference.<sup>88</sup>

### B. Range of Equivalents

To determine whether an asserted means-plus-function claim has been infringed, a judge must use a two-step analysis.<sup>89</sup> First, the judge must construe the claims to determine their legal effect by identifying structures, materials or acts described in the patent's specification and their equivalents.<sup>90</sup> Second, the construed claims are compared to the accused device.<sup>91</sup> For literal infringement, the accused device must perform an identical function as the one recited in the asserted means-plus-function claim.<sup>92</sup> In addition, the accused device must utilize the same structure, materials, or their equivalents, described in the specification to perform the function.<sup>93</sup>

The range of structural "equivalents" applicable to literal infringement of a means-plus-function claim is different from the "equivalents" referenced in cases involving the also much debated doctrine of equivalents.<sup>94</sup> In general, the statutory equivalence analysis under § 112, P 6, while rooted in similar concepts as the doctrine of equivalents counterpart, is narrower.<sup>95</sup> That is,

---

88. *Atmel*, 198 F.3d at 1386.

89. *Cybor Corp. v. FAS Technologies Inc.*, 138 F.3d 1448, 1466 (Fed. Cir. 1998).

90. *Id.*; The first step, construing the patent claim, is ultimately a question for the judge. See *Markman*, 517 U.S. at 388 ("So it turns out here, for judges, not juries, are the better suited to find the acquired meaning of patent terms."). In construing a means-plus-function claim, the judge must look to the structures, materials, or acts disclosed in the patent's specification. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992).

91. *Cybor Corp.*, 138 F.3d at 1466.

92. See *Pennwalt Corp. v. Durand-Whayland, Inc.*, 833 F.2d 931, 934 (Fed. Cir. 1987).

93. *Micro Chem., Inc. v. Great Plains Chem. Co.*, 103 F.3d 1538, 1547 (Fed. Cir. 1997).

94. In the doctrine of equivalents context, the following test is often used: if the function, way, or result of the allegedly infringing structure is substantially different from that described by the claim limitation, equivalence is not established. This tripartite test developed for the doctrine of equivalents is not wholly transferable to the § 112, P 6 statutory equivalence context. Rather, under § 112, P 6, functional identity and structural equivalence is required. See *Odetics, Inc. v. Storage Tech. Corp.*, 185 F.3d 1259, 1267 (Fed. Cir. 1999).

95. *Id.*

structural equivalence under § 112, P 6 is, as noted by the U.S. Supreme Court, “an application of the doctrine of equivalents . . . in a restrictive role.”<sup>96</sup>

Furthermore, structural equivalents under § 112, P 6 must have been available at the time of the issuance of the claim.<sup>97</sup> “An equivalent structure or act under § 112, P 6 cannot embrace technology developed after the issuance of the patent because the literal meaning of a claim is fixed upon its issuance.”<sup>98</sup> That is, an “after arising equivalent can only infringe under the doctrine of equivalents.”<sup>99</sup>

Given the apparent greater scope of protection the doctrine of equivalents provides patent holders, it seems determining whether a structure is equivalent in the context of § 112, P 6 would be futile. However, there are many situations in which a patent holder is unable to invoke the doctrine of equivalents to demonstrate the differences between the patented structure and the alleged infringer’s structure are insubstantial.<sup>100</sup> In these instances, the equivalents afforded to a means-plus-function claim under § 112, P 6 may become incredibly important to a patent holder.

In general, determining the scope of an invention by deciphering what structures are equivalent to those corresponding to a means-plus-function claim can be an arduous task and generally renders unpredictable results. This unpredictability aggravates the intent of patent law to put the public on notice as to what specific subject matter the patent holder has exclusive rights. When the relevant public is unable to determine with reasonable certainty the structures that are covered by a patent, the likelihood of infringement increases. Furthermore, this unpredictability may stifle innovation by hindering others from designing around issued patents.

If inventors were permitted to incorporate by reference non-patent documents corresponding to non-essential elements of means-plus-function claims, as defined by those skilled in the art, patent holders could more readily provide the public an enhanced picture as to what range of equivalents the patent holder regards as his invention. Furthermore, this practice would enable inventors to supplement structural descriptions in the specification to further

---

96. Warner-Jenkinson, Inc. v. Hilton Davis Chem. Co., 520 U.S. 17, 28 (1997).

97. *Al-Site*, 174 F.3d at 1320.

98. *Id.*

99. *Id.*

100. For example, prosecution history estoppel precludes a patentee from obtaining under the doctrine of equivalents coverage of subject matter that has been relinquished during the prosecution of its patent application. *Pharmacia & Upjohn Co. v. Mylan Pharms., Inc.*, 170 F.3d 1373, 1376 (Fed. Cir. 1999). Therefore, the doctrine of equivalents is subservient to prosecution history estoppel. Moreover, the Federal Circuit, sitting *en banc*, recently held that a patent claim limitation is entitled to no range of equivalents if it is narrowed by amendment during patent prosecution for any reason related to the statutory requirements for a patent. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558 (Fed. Cir. 2000).

illustrate the range of equivalents the patent holder regards as his invention with respect to “essential material.” This policy could undoubtedly result in overreaching on the part of patent applicants. If such practice were allowed, inventors would have an incentive to include as many references as possible to create an enlarged scope of patent protection.

This problem exists, however, whether the inventor explicitly describes the material in the specification or merely incorporates the same by reference. More specifically, the applicable laws for determining whether a claim is valid and whether an accused device infringes that claim will still apply. By allowing the incorporation of non-patent documents by reference, inventors could more readily identify the structures they believe to be equivalents. This policy would also further the statutory mandated balance of completeness and conciseness.

#### IV. CONCLUSION

In *Atmel*, the Federal Circuit held that (1) the knowledge of one skilled in the art must be considered when determining whether sufficient structure is disclosed in a specification to support a means-plus-function claim and (2) structures corresponding to means-plus-function claims must be disclosed in the specification, i.e., the contents of the Dickson article could not be incorporated by reference.

The foregoing proposes a modified standard for determining whether a specification supports a means-plus-function claim in accordance with § 112, P 2. This standard suggests the second element of the Federal Circuit’s holding in *Atmel* should be conditioned by requiring inventors to explicitly describe only key elements comprising “essential material” of the invention as defined by those skilled in the relevant art. This way, a balance between the intent of patent law to require inventors to teach their inventions to the public and discouraging inventors from reiterating well-known procedures, compositions, structures, or designs in the art could be achieved. In addition, by allowing non-patent publications corresponding to means-plus-function claims to be incorporated by reference, inventors could more readily identify the range of equivalents that are purportedly covered by a patent.

JAMES B. SURBER\*

---

\* J.D. Candidate, Saint Louis University School of Law, 2002; M.S. University of Missouri; B.S. Truman State University. The author would like to thank his wife Holly for her support during the preparation of this article.



