

**FESTO, NOTICE AND THE APPLICATION OF  
PROSECUTION HISTORY ESTOPPEL TO  
MEANS-PLUS-FUNCTION CLAIM LIMITATIONS**

Scott G. Ulbrich<sup>†</sup>

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† Mr. Ulbrich is a 2000 graduate of William Mitchell College of Law (*cum laude*) and is admitted to practice before the United States Patent and Trademark Office. Currently, Mr. Ulbrich is an associate at Patterson, Thunte, Skaar & Christensen, P.A., where he practices in both intellectual property litigation and patent prosecution. Mr. Ulbrich expresses his appreciation for the research assistance of Tye Biasco, a current student at William Mitchell College of Law, 2002 expected. The opinions expressed in this article are the personal views of the author and not that of the Patterson firm or any of its clients.

## I. INTRODUCTION

On November 29, 1999 the United States Court of Appeals for the Federal Circuit, sitting en banc, decided *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*,<sup>1</sup> which has proven to be one of its most controversial decisions in the Federal Circuit's almost twenty years of existence. *Festo* holds that a claim limitation that is amended for patentability purposes during prosecution, which narrows the scope of any claim containing that limitation is entitled to no range of equivalents under the doctrine of equivalents.<sup>2</sup> Equivalents<sup>3</sup> are no longer available in many instances because it was very common, in the past, for practitioners to amend the pending claims in a patent application during prosecution to secure an allowance. The use of so-called means-plus-function claim language may preserve the availability of some equivalents when none are otherwise available under the doctrine of equivalents.<sup>4</sup>

In *Festo*, the Federal Circuit based its holding, in part, on prosecution history estoppel.<sup>5</sup> One of the most basic public policies underlying prosecution history estoppel is the policy of notice.<sup>6</sup> Notice requires that the public receive clear information on the scope of a given patent's claims. However, the patent laws of the United States permit a particular type of claim form, means-plus-function, which inherently does not provide the public with clear

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1. 234 F.3d 558 (Fed. Cir. 2000), *cert. granted*, 121 S. Ct. 2519 (June 18, 2001).

2. *See id.* at 574.

3. The court, in *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 609 (1950), stated the following:

In determining equivalents, things equal to the same thing may not be equal to each other and, by the same token, things for most purposes different may sometimes be equivalents. Consideration must be given to the purpose for which an ingredient is used in a patent, the qualities it has when combined with the other ingredients, and the function which it is intended to perform. An important factor is whether persons reasonably considered in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was.

4. A "literal" equivalent is different than an equivalent under the doctrine of equivalents. *See Kraft Foods, Inc. v. Int'l Trading Co.*, 203 F.3d 1362, 1372 (Fed. Cir. 2000).

5. *Festo*, 234 F.3d at 574.

6. "[T]he notice function of patent claims has become paramount, and the need for certainty as to the scope of patent protection has been emphasized." *Id.* at 575.

notice of a patent claim's scope.<sup>7</sup>

Means-plus-function claim limitations may evade the notice principles because the scope of means-plus-function claim limitations encompasses a range of equivalents as a matter of law. Presumably, means-plus-function claim limitations include equivalents even when equivalents would not be otherwise available because of estoppel.

Section 112, paragraph six, of the patent statute provides language for a means-plus-function claim.<sup>8</sup> Following the addition of paragraph six in the 1952 Patent Act, the courts were left to determine several issues: (1) the scope of claimed structural embodiments; (2) equivalent evaluations; (3) the permissible scope of anticipatory art; and (4) the effect of estoppel considerations on the range of claimed embodiments. The Federal Circuit has provided practitioners with a substantial body of case law on the first three issues. However, the Federal Circuit has not provided much guidance on the fourth issue. Moreover, it is unknown whether the reasoning applied in *Festo Corp. v. Shoketsu*,<sup>9</sup> which bars the application of the doctrine of equivalents in a majority of cases, will have any effect on the range of literal equivalents included in means-plus-function claims.

This article begins by briefly reciting the Federal Circuit's position on the first three issues above and then provides a background for analysis of the fourth issue. sections two and three illustrate the patent system and explain the important public policy behind notice, including some background on the purpose of section 112, paragraph six. sections four and five are a digest of the means-plus-function infringement analysis. This digest provides a context for the closing sections, six and seven, which examine the Federal Circuit's application of both argument estoppel and amendment (*Festo*) estoppel to means-plus-function claim

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7. 35 U.S.C. § 112, ¶ 6 (2001) 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 the corresponding structure, material, or acts described in the specification and equivalents thereof.

8. *Id.*

9. "The application of a complete bar to the doctrine of equivalents whenever a claim amendment gives rise to prosecution history estoppel similarly reduces the conflict and tension between the patent protection afforded by the doctrine of equivalents and the public's ability to ascertain the scope of a patent." *Festo*, 234 F.3d at 577.

limitations. Section seven concludes with arguments for and against these applications.

## II. PATENTS ARE LIKE REAL ESTATE: AN ANALOGY

It is helpful to visualize the universe of all patentable subject matter as a large piece of real estate. Each patent is defined by the fence around smaller portions of the initial piece of land. The fence itself is the periphery of the claimed subject matter contained within the fence. A patent applicant fences off a portion of territory with the fence to signify ownership of that portion of real estate and to indicate the scope of claimed subject matter to potential infringers.<sup>10</sup> In short, the patent defines the boundary of the patent claim's coverage or scope. Therefore, patent owners naturally desire to fence off the largest possible territory.

The patent office performs a regulatory function by following certain procedures and protocols to ensure that patent applicants do not claim more territory than they are entitled. Typically, an applicant finds that she or he is limited by the placement of neighboring fences. In that situation, the patent office essentially determines that these fences are too close to each other, and it uses sections 102 and 103 of the patent statutes<sup>11</sup> to reject the patent application.

The applicant typically responds to the examiner's rejections by amending his claims or attempting to traverse the rejections. Amending the claims is analogous to moving the applicant's fences. Traversing a rejection is analogous to arguing about the location of the fences. After one or more iterations of amendments and/or traverses, the examiner may allow a patent.

The public first receives notice of a patent when it is published.<sup>12</sup> After publication, the file history, containing all the

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10. *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1530 n.2 (Fed. Cir. 1995) (citing Charles Eliot Mitchell, Commissioner of Patents, *An address Delivered at the Proceedings of the Congress on the "Birth & Growth of the American Patent System"* (1890), reprinted in PATENT CENTENNIAL CELEBRATION PROCEEDINGS AND ADDRESSES, 52 (1891)) and in Craig Allen Nard, *Certainty, Fence Building, and the Useful Arts*, 74 IND. L.J. 759, 759 (1999)).

11. 35 U.S.C. § 102 (2001) (outlining conditions for patentability, novelty, and loss of right to patent); 35 U.S.C. § 103 (2001) (outlining conditions for patentability and non-obvious subject matter).

12. Under the American Inventor's Protection Act, Pub. L. No. 106-113 [§ 4502(a)], there are now provisions in place for eighteen-month publication of pending applications. 35 U.S.C. § 122(b) (2001). However, one may still elect not

amendments and arguments, also becomes public record.<sup>13</sup> After reviewing the record, one may find that the applicant disclaimed some of the potential coverage or territory by arguing or narrowly amending the claims to avoid the examiner's rejections. The public can then rely on these limiting statements when making infringement assessments.

### III. HISTORY AND PURPOSE OF MEANS-PLUS-FUNCTION LIMITATIONS

Section 112 of the patent statute provides limitation on means-plus-function claims. In 1952, Congress added paragraph six to section 112 to provide that 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.<sup>14</sup> This addition was likely in direct response to the United States Supreme Court's decision in *Halliburton Oil Well Cementing Co. v. Walker*,<sup>15</sup> which invalidated patent claims containing "means" language because they were indefinite.<sup>16</sup> Some believe that Congressional intent in adding paragraph six was to codify the judicially created equitable doctrine of equivalents.<sup>17</sup> Alternatively,

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to publish under certain circumstances. 35 U.S.C. § 122(b)(2) (2001).

13. See 37 C.F.R. 1.14(c)(2) ("A copy of the specification, drawings, and all papers relating to the file of an abandoned or published application may be provided to any person upon written request, including the fee set forth in § 1.19(b)(2).").

14. 35 U.S.C. § 112, ¶ 6 (2001) states as follows:

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

16. *Halliburton* involved an apparatus designed to facilitate the pumping of oil out of wells that do not have sufficient natural pressures to force the oil to gush. *Id.* at 3. The patent at issue provided an apparatus composed of old and well-known devices to measure the time required for pressure waves to move to and back from the fluid surface of an oil well. *Id.* at 4-5. However, the patent used "means" language rather than physical characteristics or arrangement to describe the new matter. *Id.* at 8. The court goes on to state the following:

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 . . .

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

17. See Julia Hodge, § 112, ¶ 6 *Claim Interpretation and the Doctrine of Equivalents: An Invitation to Confused Thinking*, 17 SANTA CLARA COMPUTER & HIGH

it may be that Congress was merely bowing to the pressure of interested parties such as industry and patent attorneys seeking to maintain the viability of functional claims.

Pasquale Federico, the primary author of the Patent Act of 1952, described the act as follows:

It is unquestionable that some measure of greater liberality in the use of functional expressions in combinations claims is authorized than had been permitted by some court decisions, and that the decisions such as that in *Halliburton* are modified or rendered obsolete, but the exact limits of the enlargement remain to be determined.<sup>18</sup>

Arguably, the language of the statute Congress enacted providing means-plus-function claim limitations has restricted the scope of claimed structural embodiments. However, over the last fifty years, the courts' treatment of these claim limitations and scope restrictions has been wide-ranging. Initially, the courts took a very broad view of the scope of structures covered by means-plus-function claim limitations.<sup>19</sup> In *D.M.I. v. Deere*, the Federal Circuit reversed the lower court's ruling of non-infringement, holding that a functional claim was not limited to the exact structure described in the patent specification.<sup>20</sup> The Federal Circuit held that the patentee must disclose some enabling means for accomplishing the claimed function and that there is no requirement that an applicant describe or predict every possible means of accomplishing that function.<sup>21</sup> The period following the *D.M.I.* decision is appropriately considered the heyday of the means-plus-

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TECH L.J. 203, 221 (2000). Hodge supports her theories with the statements of Judge Bryson: "[a]ll 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 . . . . This provision also gives recognition to the existence of the doctrine of equivalents." *Id.* at 220. The author also cites statements of L. James Harris, patent counsel for the drafting committee, "[i]t was felt by the drafters that means claims should be permitted in combination claims . . . to provide for the proper interpretation of the claims commensurate with the invention, the doctrine of equivalents is specifically mentioned in the section." *Id.*

18. Pasquale J. Federico, *Commentary on the New Patent Act*, 75 J. PAT. & TRADEMARK OFF. SOC'Y. 161, 186 (1993).

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

20. "[N]o estoppel can arise which may restrict the broad language of the claim to a limitation which is not specifically stated therein, and is entitled to show infringement by an equivalent structure which achieves the same result." *Id.* at 1572.

21. *Id.* at 1574.

function claim.

The most favored status of the means-plus-function limitation did not last. In 1991, the Federal Circuit narrowed its interpretation of such claims. In *Laitram Corp., v. Rexnord, Inc.*,<sup>22</sup> the court held that claim differentiation could not be used as a tool to make a means-plus-function claim open-ended by including another claim specifically claiming the disclosed structure that underlies the means clause.<sup>23</sup> The Federal circuit followed this position with its decision in *Valmont Industries v. Reinke Manufacturing Co.*<sup>24</sup> In *Valmont* the court found no infringement under section 112, paragraph six because, while the *function* of the accused infringing device and patented invention were identical, their *structures* were not.<sup>25</sup>

The court also harmonized its view on the interpretation of means-plus-function claims with their examination at the PTO.<sup>26</sup> The court held in *Donaldson* that:

[t]he plain and unambiguous meaning of paragraph six is that one construing means-plus-function language in a claim must look to the specification and interpret that language in light of the corresponding structure, material, or acts described therein, and equivalents thereof, to the extent that the specification provides such disclosure. Paragraph six does not state or even suggest that the PTO is exempt from this mandate, and there is no legislative history indicating that Congress intended that the PTO should be.<sup>27</sup>

#### IV. HOW MEANS-PLUS-FUNCTION LIMITATIONS ARE INFRINGED: A UNIQUE ANALYSIS

The infringement analysis of means-plus-function limitations is different from other types of claims limitations in that it requires an additional layer of analysis. This section provides a context for that analysis and for the estoppel analysis that follows.

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

23. *Id.* at 1536.

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

25. *Id.* at 1044.

26. *In re Donaldson Co.*, 16 F.3d 1189 (Fed. Cir. 1994).

27. *Id.* at 1193.

### A. *Patent Infringement Basics*

The infringement analysis is a two-step process.<sup>28</sup> The first step is to perform a claim construction to determine the meaning of the limitations in the claim.<sup>29</sup> Because claim construction is a question of law,<sup>30</sup> the court must determine the meaning of the claims. Typically, the courts choose to hold a *Markman* hearing.<sup>31</sup>

The next step is to compare the claims as construed to the accused device.<sup>32</sup> The accused device must exhibit each and every limitation of a claim before it is considered to infringe that claim. A device may infringe either literally or under the doctrine of equivalents. In either case, the evaluation of infringement is a question of fact.

When the claim in question contains means-plus-function terms, a specialized analysis must be performed. The theoretical analysis of the law applied to means-plus-function is seemingly straightforward. However, because the means-plus-function analysis adds an extra layer of complexity to an already complex patent suit, the application of these principles is often complex and confusing. The analysis below is intended to supply an overview of the legal analysis for infringement of means-plus-function claim limitations.

### B. *Ensuring That the Limitation in Question is in Means-Plus-Function Format*

The initial inquiry for means-plus-function claim limitations ensures that the particular limitation is truly in means-plus-function form.<sup>33</sup> The form inquiry falls within the scope of claim construction and is therefore a matter of law.<sup>34</sup> The use of the term “means” initially invokes the presumption that the limitation is in means-plus-function form.<sup>35</sup> The presumption of means-plus-function can be rebutted if the limitation cites sufficient structure

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28. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995).

29. *Id.*

30. *Id.* at 970-71.

31. *See generally id.*

32. *Id.* at 976.

33. *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 1360 (Fed. Cir. 2000) (citing *Personalized Media Communications, LLC v. ITC*, 161 F.3d 696, 702 (Fed. Cir. 1998)).

34. *Id.* at 1359.

35. *Id.* at 1361 (citing *Personalized Media*, 161 F.3d at 704 nn.9-10).

to perform the claimed function.<sup>36</sup> Conversely, if the limitation does not use the term “means” then there is a presumption that the term does not invoke means-plus-function form.<sup>37</sup> This presumption can be rebutted by demonstrating that there is not sufficient structure to perform the recited function.<sup>38</sup>

### C. Construction of Means-Plus-Function Claim Limitations

Determining the meaning of the claim limitation is the next portion of the means-plus-function analysis. Means-plus-function claims limitations have two discreet parts for the courts to determine: function and corresponding structure.<sup>39</sup> The function is expressly set forth in the claim. Ordinary principles of construction apply, meaning that one should look first at the intrinsic evidence to determine any special or uncommon meaning attached to the function.<sup>40</sup> One would also look to the file history to determine if there was any argument or amendment estoppel (*Festo* estoppel).<sup>41</sup>

Next, the court must determine what, if any, structures are disclosed for performing the claimed function. Terms that do not adequately disclose structure for the claimed function are invalid under section 112, paragraph two.<sup>42</sup> The court examines the structures disclosed in the specification that correspond to the claimed function.<sup>43</sup> In the case of computer software, for example, the structure is the disclosed algorithm and not merely a microprocessor programmed to perform the particular function.<sup>44</sup>

The court must be careful to require only enough structure to perform the claimed function;<sup>45</sup> and avoid reading limitations into

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36. *Id.*

37. *Id.* (citing *Personalized Media*, 161 F.3d at 704 n.10).

38. *Id.*

39. 35 U.S.C. § 112 ¶ 6 (2001); *Reiker Enters., Inc. v. Fan Brace, Inc.*, 243 F.3d 557 (Fed. Cir. 2000) (citing *Odetics, Inc. v. Storage Tech. Corp.*, 185 F.3d 1259, 1267 (Fed. Cir. 1999)).

40. *Kegel Co. v. AMF Bowling, Inc.*, 127 F.3d 1420, 1425 (Fed. Cir. 1997) (citing *Vitronics Corp. v. Conceptor, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

41. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 234 F.3d 558, 588 (Fed. Cir. 2000), *cert. granted*, 121 S. Ct. 2519 (June 18, 2001).

42. *Kemco*, 208 F.3d at 1360-61 (Fed. Cir. 2000) (citing *In re Donaldson*, 16 F.3d 1189, 1195); *see also* 35 U.S.C. § 112 ¶ 2 (“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.”).

43. *Kemco*, 208 F.3d at 1360.

44. *WMS Gaming, Inc. v. Int’l Game Tech.* 184 F.3d 1339, 1349 (Fed. Cir. 1999).

45. *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed.

the claim from the specification.<sup>46</sup> In addition, the court must not read functional or structural additions into the claim.<sup>47</sup>

The court may also apply the principle of claim differentiation when construing claims.<sup>48</sup> Claim differentiation potentially factors in the means-plus-function construction using a typical drafting technique to place structure for the means-plus-function limitation in other claims that depend on the base claim.<sup>49</sup> Examination of other claims may provide the “guidance and context for interpreting a disputed means-plus-function limitation, especially if they recite additional functions.”<sup>50</sup> However, a means-plus-function limitation is not made open-ended by the presence of another claim containing structure for that limitation.<sup>51</sup>

Finally, the court must look to the patent’s prosecution history, also known as the file history or file wrapper, to see if any estoppel was created during prosecution.<sup>52</sup> The patent owner cannot reclaim embodiments “disclaimed” during prosecution.<sup>53</sup> This may be in the form of prosecution history estoppel.

#### *D. Literal Infringement of Means-Plus-Function Claims*

After construing both the function and the disclosed structural

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Cir. 1999) (citing *Rodime PLC v. Seagate Tech., Inc.*, 174 F.3d 1294, 1302 (Fed. Cir. 1999)).

46. The court in *Kemco* stated the following:

We are fully cognizant of the need to avoid reading limitations into a claim from the specification. To that effect we have noted that: [T]his court has consistently adhered to the proposition that courts cannot alter what the patentee has chosen to claim as his invention, that limitations appearing in the specification will not be read into claims, and that interpreting what is meant by a word in a claim “is not to be confused with adding an extraneous limitation appearing in the specification, which is improper.

*Kemco*, 208 F.3d at 1362 (quoting *Laitram Corp. v. NEC Corp.*, 163 F.3d 1342, 1348, (Fed. Cir. 1998) (internal quotations and citations omitted)); *see also* *Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1238 (Fed. Cir. 2001) (citing *Tate Access Floors, Inc. v. Maxcess Techs., Inc.*, 222 F.3d 958, 966 (Fed. Cir. 2000)).

47. *Wenger*, 239 F.3d at 1233 (citing *Micro Chem*, 194 F.3d at 1258).

48. *Id.*

49. *Id.* at 1233-34 (analyzing the application of claim differentiation in the means-plus-function construction consideration).

50. *Id.* at 1234.

51. *Id.*

52. *Id.* at 1238-39.

53. *Id.* at 1238 (citing *Biodex Corp. v. Loredan Biomedical, Inc.*, 946 F.2d 850, 862 (Fed. Cir. 1991)).

embodiments, one must determine whether the accused device possesses the claim limitation in question. The accused device may infringe literally or it may infringe under the doctrine of equivalents. This section addresses the requirements of literal infringement.

The literal infringement analysis can be broken down into two components, function and structure.<sup>54</sup> The function of the claim limitation at issue must first be identical to the accused device.<sup>55</sup> If the structure is not identical, then the accused device does not possess the means-plus-function limitation at issue.

The second part of the analysis is whether the structure of the accused device is the same as the disclosed structure corresponding to the claim limitation, or if it is a “literal” equivalent thereof.<sup>56</sup> Determining if the disclosed and accused structures are identical is self-explanatory. But, if the two are not identical, then one must determine if the two structures are “equivalent,” that is, if they are insubstantially different within the meaning of § 112 ¶ 6.<sup>57</sup>

A “literal” equivalent is different than an equivalent under the doctrine of equivalents.<sup>58</sup> The structure of the accused device, and only the structure, must be insubstantially different than the disclosed structure for the limitation in question.<sup>59</sup>

One method of determining whether the two structures are insubstantially different is to apply the modified function-way-result test. Federal Circuit Judge Lourie first applied the modified function-way-result test to the literal equivalent analysis in *Chiuminatta Concrete v. Cardinal Industries*<sup>60</sup> and subsequently

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54. *Lockheed Martin Corp. v. Space Sys./Loral, Inc.*, 249 F.3d 1314, 1325 (Fed. Cir. 2001).

55. *Id.*; *IMS Tech., Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1430 (Fed. Cir. 2000); *WMS Gaming, Inc. v. Int'l Game Tech.* 184 F.3d 1339, 1350 (Fed. Cir. 1999); *Gen. Elec. Co. v. Nintendo Co., Ltd.*, 179 F.3d 1350, 1354 (Fed. Cir. 1999) (citing *Mas-Hamilton Group v. LaGard, Inc.*, 156 F.3d 1206, 1211-12 (Fed. Cir. 1998)).

56. *Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1332 (Fed. Cir. 2001) (citing *WMS Gaming*, 184 F.3d at 1350).

57. *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 1364 (Fed. Cir. 2000) (holding that an equivalent under §112 ¶ 6 (1) performs the identical function and (2) is otherwise insubstantially different with respect to structure).

58. *Kraft Foods, Inc. v. Int'l Trading Co.*, 203 F.3d 1362, 1372 (Fed. Cir. 2000).

59. *WMS Gaming*, 184 F.3d at 1352.

60. *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1311 (Fed. Cir. 1998) (“[T]he structure in the accused device . . . operates in a substantially different way compared with the structure of the claimed

clarified the test in *Kemco*.<sup>61</sup> In *Odetics*, Judge Clevenger stated, “As we have noted, this tripartite test developed for the doctrine of equivalents is not wholly transferable to the section 112, paragraph six statutory equivalence context.”<sup>62</sup>

The courts have observed that the “way” and “result” portions of the test are the same in the doctrine of equivalents analysis.<sup>63</sup> However, equivalence is not a prisoner of a formula and is not an absolute void of context.<sup>64</sup> Therefore the modified function-way-result test may not always be decisive in determining literal equivalents.<sup>65</sup>

*E. Infringement of Means-Plus-Function Claims Under the Doctrine of Equivalents*

A claim limitation, not literally present in an accused device, may still infringe under the doctrine of equivalents theory of infringement. The doctrine of equivalents is a judicially created doctrine<sup>66</sup> and is based upon the courts inherent equitable powers. The doctrine of equivalents applies where the accused device is insubstantially different than the construed claim limitation.<sup>67</sup> Through its numerous decisions in the past few years, the Federal Circuit has made it very clear that the doctrine of equivalents applies to means-plus-function claim limitations.<sup>68</sup>

A means-plus-function claim limitation infringes the doctrine of equivalents if the accused device exhibits a feature that is insubstantially different than the claim limitation at issue.<sup>69</sup> The Federal Circuit has recently been fond of using the function-way-result test from *Graver Tank*.<sup>70</sup> In the function-way-result test, the

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device . . .”).

61. *Kemco Sales v. Control Paper Co.*, 208 F.3d 1364 (Fed. Cir. 2000).

62. *Odetics, Inc. v. Storage Tech. Corp.*, 185 F.3d 1259, 1267 (Fed. Cir. 1999).

63. *Kemco*, 208 F.3d at 1364.

64. *Id.* n.6 (citing *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 609 (1950)).

65. *Id.*

66. *Graver Tank*, 339 U.S. at 609.

67. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17 (1997) (discussing *Graver Tank*, 339 U.S. at 612).

68. *WMS Gaming, Inc. v. Int'l Game Tech.* 184 F.3d 1339, 1352-53 (Fed. Cir. 1999); *Lockheed Martin Corp. v. Space Sys./Loral, Inc.*, 249 F.3d 1314, 1325 (Fed. Cir. 2001); *Kemco*, 208 F.3d at 1364; *Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1332 (Fed. Cir. 2001).

69. *Kemco*, 208 F.3d at 1364.

70. *Id.* (citing *Graver Tank*, 339 U.S. at 608).

accused device must perform substantially the same function in substantially the same way to achieve substantially the same result as the accused structure.<sup>71</sup> However, the function-way-result test is not applicable to every situation.<sup>72</sup> In some instances, the court may look to other measures to determine the scope of permissible equivalents such as known interchangeability by those skilled in the art.<sup>73</sup>

The practitioner should remember that the application of the modified function-way-result test for literal equivalents and the traditional function-way-result test for the doctrine of equivalents are separate considerations. The difference between the two is that the literal equivalents analysis requires an identical function while the doctrine of equivalents requires the function to be insubstantially different.<sup>74</sup> The “way” and “result” prongs of the test are identical. Therefore, the doctrine of equivalents is slightly broader in scope than literal equivalents.

#### V. PROSECUTION HISTORY ESTOPPEL

Prosecution history estoppel manifests itself in two different contexts: claim construction and infringement under the doctrine of equivalents.<sup>75</sup> Argument estoppel narrows the scope of a claim limitation that is construed by the court as a matter of law.<sup>76</sup> Amendment estoppel prevents a patentee from recapturing subject matter surrendered during the prosecution of a patent.<sup>77</sup>

##### A. *Argument Estoppel*

Argument estoppel is based on the public policy behind notice—that potential infringers are entitled to rely on the public record of a patent in determining its meaning and scope.<sup>78</sup> Argument estoppel is formed from arguments made during the

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71. *Id.*

72. *Warner-Jenkinson*, 520 U.S. at 36.

73. *Kemco* at 1364-65.

74. *Id.*

75. *See Lockheed Martin Corp. v. Space Systems/Loral, Inc.*, 249 F.3d 1314 (Fed. Cir. 2001); *Southwall Tech., Inc. v. Cardinal IG Co.*, 54 F.3d 1570 (Fed. Cir. 1995).

76. *See Southwall Tech.*, 54 F.3d at 1576.

77. *See Lockheed Martin*, 249 F.3d at 1326.

78. *See Lemelson v. Gen. Mills, Inc.*, 968 F.2d 1202, 1208 (Fed. Cir. 1992) (“Other players in the marketplace are entitled to rely on the evidence of record made in the patent office in determining the meaning and scope of the patent.”).

prosecution of a patent by the applicant in order to obtain allowance.<sup>79</sup> The “[a]rguments and amendments made during the prosecution of a patent and other aspects of the prosecution history, as well as the specification and other claims, must be examined to determine the meaning of the terms in the claims.”<sup>80</sup>

Notice requires that disclaimed subject matter cannot be reclaimed through charges of infringement. “The prosecution history limits the interpretation of the claim terms so as to exclude any interpretation that was disclaimed during prosecution . . . . Claims may not be construed one way in order to obtain their allowance and in a different way against accused infringers.”<sup>81</sup> It is irrelevant whether the assertions were necessary to secure allowance.<sup>82</sup> Finally, “arguments made during prosecution regarding the meaning of a claim term are relevant to the interpretation of that term in every claim of the patent absent a clear indication to the contrary.”<sup>83</sup>

#### B. *Amendment (Festo) Estoppel*<sup>84</sup>

A patentee may limit the scope of the doctrine of equivalents during prosecution because a patentee cannot recapture subject matter surrendered during the prosecution of the patent.<sup>85</sup> Such estoppel may arise by either amendments made to overcome prior art rejections, or by arguments made to secure allowance of a

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79. See *Southwall Tech.*, 54 F.3d at 1576 (“Claims may not be construed one way in order to obtain their allowance and in a different way against accused infringers.”).

80. *Id.*

81. *Id.* (citing *ZMI Corp. v. Cardiac Resuscitator Corp.*, 844 F.2d 1576, 1580 (Fed. Cir. 1988)).

82. *Id.* at 1583.

83. *Id.* at 1579.

84. The reader is cautioned that the *Festo* holding is a very controversial one among practitioners. It has spawned considerable debate and was granted certiorari by the U.S. Supreme Court. 121 S. Ct. 2519 (2001). Therefore, it is possible that the Federal Circuit’s en banc holding in *Festo* will be overruled. Regardless of that outcome, the analysis still involves a determination of the subject matter disclaimed by the patent applicant. Prior to *Festo*, this analysis was referred to as the flexible bar. See *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 234 F.3d 558, 573-75 (Fed. Cir. 2000), *cert. granted*, 121 S. Ct. 2519 (June 18, 2001).

85. *Lockheed Martin Corp. v. Space Systems/Loral, Inc.*, 249 F.3d 1314, 1326 (Fed. Cir. 2001) (citing *Warner-Jenkinson v. Hilton Davis Chem. Co.*, 520 U.S. 17, 31-32 (1997)).

claim.<sup>86</sup>

The first step in an amendment estoppel analysis is to determine which claim limitations are allegedly infringed by equivalents.<sup>87</sup> The court must next determine whether an amendment was made concerning the limitation at issue during the prosecution of the patent.<sup>88</sup> If the claim limitation at issue was amended, the court must determine whether the amendment narrowed the scope of the claim.<sup>89</sup> If the amendment did narrow the claim's scope, prosecution history estoppel will bar the application of the doctrine of equivalents to the claim limitation unless the patent holder establishes that the amendment was made for a purpose unrelated to patentability.<sup>90</sup> When prosecution history estoppel exists for a claim limitation, that limitation has no range of equivalents available, and infringement under the doctrine of equivalents is impossible.<sup>91</sup> In addition, "the court still may need to consider whether statements made during prosecution give rise to argument-based estoppel."<sup>92</sup>

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86. *Festo*, 234 F.3d at 586.

87. *Id.*

88. *Id.*

89. A claim is narrowed if it is narrower in any respect, even though it may also be otherwise broadened in some respects. Voluntary amendments are also treated the same as other amendments. Therefore, a voluntary amendment of a limitation that narrows the scope of a claim for a reason related to patentability is subject to estoppel. *See id.* at 568. Narrowing may also include the swapping of means-plus-function limitations for an identical structural limitation because the means-plus-function limitation is broader by encompassing equivalents to the latter claimed structure. *See id.* at 589.

90. *Id.* at 566-67 (holding that for determining whether an amendment gives rise to prosecution history estoppel, a "substantial reason related to patentability" is not limited to overcoming or avoiding the prior art, but instead includes any reason which relates to the statutory requirements for a patent). Substantial reasons to patentability include 35 U.S.C. §§ 101 and 112 issues as well as 35 U.S.C. §§ 102 and 103 issues. An amendment made for purposes of "clarifying" the claims; any other voluntary purpose is sufficient to create prosecution history estoppel. *Id.* at 568. An amendment without an explanation is assumed to be for patentability purposes. *Id.* at 578.

91. *Id.* at 569 ("When a claim amendment creates prosecution history estoppel with regard to a claim element, there is no range of equivalents available for the amended claim element. Application of the doctrine of equivalents to the claim element is completely barred (a 'complete bar').").

92. *Id.*

## VI. APPLICATION OF ARGUMENT ESTOPPEL TO MEANS-PLUS-FUNCTION CLAIM LIMITATIONS

The Federal Circuit has established clear precedent for applying argument estoppel to means-plus-function claim limitations.<sup>93</sup> In *Cybor*,<sup>94</sup> the Federal Circuit held that prosecution history is relevant to the construction of a claim in means-plus-function form.<sup>95</sup> The court explained that if a patent owner's position on construction of a means-plus-function claim limitation is inconsistent with that argued during prosecution, it may create an estoppel just as such arguments may create an equivalents estoppel under the doctrine of equivalents.<sup>96</sup> Therefore, clear assertions in support of patentability may affect the range of equivalents under section 112, paragraph six.<sup>97</sup>

Disclaimer of structure cannot be later asserted against an accused infringer. "Statements made during the prosecution relating to structures disclosed in the specification are certainly relevant to determining the meaning of the means-plus-function limitations of the claims at issue."<sup>98</sup> If an applicant specifically distinguishes a structure from what is claimed during prosecution, the applicant will be estopped from asserting a scope for the same claim that covers that structure.<sup>99</sup>

The inquiry relevant to creating such estoppel is "whether a competitor would reasonably believe that the applicant had surrendered the relevant subject matter."<sup>100</sup> It is helpful to analyze the application of this literal equivalents estoppel to illustrate the willingness of the courts to narrow or even eliminate the range of literal equivalents under certain circumstances.

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93. See, e.g., *Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1225 (Fed. Cir. 2001); *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448 (Fed. Cir. 1998); *Alpex Computer Corp. v. Nintendo Co.*, 102 F.3d 1214, 1223 (Fed. Cir. 1996).

94. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448 (Fed. Cir. 1998).

95. *Id.* at 1457 (citing *United States v. Teletronics Inc.*, 857 F.2d 778, 782 (Fed. Cir. 1988)).

96. *Id.* ("[J]ust as prosecution history estoppel may act to estop an equivalence argument under the doctrine of equivalents, positions taken before the PTO may bar an inconsistent position on claim construction under § 112, ¶ 6.").

97. *Id.* ("Clear assertions in support of patentability thus may affect the range of equivalents under § 112, ¶ 6.").

98. *Alpex*, 102 F.3d at 1220.

99. *Id.* at 1221 (citing *Sofamor Daneck Group, Inc. v. DePuy-Motech, Inc.*, 74 F.3d 1216, 1220 (Fed. Cir. 1996)).

100. *Cybor*, 138 F.3d at 1457.

In *Cybor*,<sup>101</sup> one of the claim terms at issue was “second pumping means.”<sup>102</sup> The court examined the file history and the prior art reference and determined that the district court properly did not limit the scope of these terms because the prosecution history statements cannot be interpreted as precluding every type of external reservoir.<sup>103</sup> The disclaimed subject matter is narrowly interpreted to be a physically unattached reservoir that has independent functionality.<sup>104</sup>

*Cybor* also attempted to use the same estoppel arguments to avoid infringement under the doctrine of equivalents.<sup>105</sup> The court found *Cybor*'s arguments unpersuasive for the same reasons that it cited for plaintiff's section 112, paragraph six arguments.<sup>106</sup>

In *Alpex Computer Corp. v. Nintendo Co.*,<sup>107</sup> defendant Nintendo argued that its gaming system did not infringe Alpex's patent because Nintendo used a shift register rather than the RAM memory map that the Alpex patent required.<sup>108</sup> Nintendo argued that the term “means responsive” in the Alpex patent is limited to a RAM based, bit-map video display structure.<sup>109</sup> The court found that

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101. *Cybor* was a declaratory action wherein Cybor sued defendant FAS for a declaration of non-infringement of U.S. Patent No. 5,167,837. *See id.* at 1451.

102. *Id.* at 1456. The plaintiff contended that these terms could not cover any reservoir for accumulating fluid that is external to the second pump because the defendant argued to overcome an obviousness rejection stating that the prior art reference did not provide a separate container for collecting permeate or teach the collection of fluid in a second pumping means. *Id.* at 1457.

103. *Id.*

104. *Id.*

105. *Id.* at 1460.

106. *Id.* (“The inventor’s statements to the PTO regarding the *Storkebaum* reference, given the marked differences between the reference and the patented and accused devices, do not show the deliberate unequivocal surrender of all external reservoirs.”)

107. *Alpex Computer Corp. v. Nintendo Co.*, 102 F.3d 1214 (Fed. Cir. 1996).

108. *Id.* at 1219.

109. *Id.* The *Alpex* court explained that during prosecution relative to overcoming a prior art reference:

Applicants' display system utilizes a random access memory (RAM) which is under the control of a micro-processor. . . . The random access capability is important since this enables the selected image device to be located directly in any desired area of the RAM.

Okuda, in contrast, does not use a random access memory but, instead, employs a series of shift registers as his refresh memory which corresponds to applicants' RAM. Because random access to the shift registers is not possible, Okuda is unable to selectively modify a single bit in the memory but, instead, must operate on a line at a time to modify the stored display data.

the district court, in adopting the recommendations of the special master, did not expressly consider the prosecution history statements of the applicant.<sup>110</sup> Alpex countered that such statements were not made with respect to the claims Nintendo allegedly infringed.<sup>111</sup> However, the court found Alpex's arguments unpersuasive.<sup>112</sup> The court observed that the "statements made by Alpex during prosecution with regard to the Okuda prior art patent emphasize that Alpex claimed a video display system based on the use of RAM capable of modifying a single bit, or pixel, on the television receiver."<sup>113</sup> Because of the distinguished prior art and the fact that the defendant used the same structural and functional traits, Alpex's claims could not cover defendant's device.<sup>114</sup>

The Federal Circuit has recently clarified its position on the application of argument estoppel to the literal infringement analysis. In *Wenger Manufacturing v. Coating Machinery Systems*,<sup>115</sup> the defendant argued that prosecution history estoppel precluded a finding of infringement by a machine that does not recirculate air.<sup>116</sup> The *Wenger* court observed that, "[t]his court has previously stated that the doctrine of prosecution history estoppel is

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*Id.* (citations omitted).

110. *Id.*

111. *Id.*

112. *Id.* at 1220.

[T]he prosecution history of all claims is not insulated from review in connection with determining the fair scope of [a] claim . . . . To hold otherwise would be to exalt form over substance and distort the logic of this jurisprudence, which serves as an effective and useful guide to the understanding of patent claims.

*Id.* (quoting *Builders Concrete, Inc. v. Bremerton Concrete Prods. Co.*, 757 F.2d 255, 260 (Fed. Cir. 1985)).

113. *Id.* at 1220.

114. *Id.* at 1221. It is also important to note that the special verdict form to the jury inquired, "[D]o you find that claims 12 and 13 require a structure that includes a display RAM which has discrete storage positions which correspond to each of the bars or pixels of the TV screen?" Since the jury answered in the affirmative, it was clear that the jury's findings were inconsistent with the correct claim interpretation.

115. 239 F.3d 1225 (Fed. Cir. 2001).

116. *Id.* at 1238. The defendant claimed that the plaintiff created the estoppel by amending the claims to overcome an anticipatory, prior-art-based rejection and corresponding argument. The court did not consider such argument because it was contained in an amendment not entered into the file wrapper. However, the court did agree that the plaintiff did distinguish the prior art reference based on its lack of a housing through argument in the prosecution history. *Id.*

'irrelevant' to the determination of literal claim scope."<sup>117</sup> The court recognized that there is a clear distinction between using prosecution history to construe disputed claim language, and applying the doctrine of prosecution history estoppel to prevent a patentee from obtaining under the doctrine of equivalents coverage of subject matter that was relinquished during prosecution.<sup>118</sup>

However, the court addressed the application of prosecution history estoppel to the literal analysis of infringement for means-plus-function claim limitations stating:

[J]ust as prosecution history estoppel may act to estop an equivalence argument under the doctrine of equivalents, positions taken before the PTO may bar an inconsistent position on claim construction under § 112, ¶ 6.<sup>119</sup>

The *Wenger* court then reiterated that the relevant inquiry is whether a competitor would reasonably believe that the applicant had surrendered the relevant subject matter.<sup>120</sup>

The rules of law from these three leading cases on the application of prosecution history estoppel to literal equivalents can be synthesized into a few basic guidelines. First, prosecution history can create an estoppel that can narrow the application of literal equivalents for means-plus-function claim limitations. Second, the disclaimer must be reasonably explicit.

In *Cybor* and *Wenger*, the Federal Circuit did not apply estoppel, but did so in *Alpex*. The clear difference between these two findings is that the defending parties in *Cybor* and *Alpex* were asking the court to infer a disclaimer based upon prior art that did not contain the same elements as the accused devices. In *Alpex*, the accused product had the same element as the prior art.

This leads to a third guideline. The more the accused product is similar to the prior art that forms the basis of an estoppel argument, the more likely the court is going to accept such an argument. In this sense, the best position that defendants could

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117. *Id.* at 1239 (citing *Biodex Corp. v. Loredan Biomedical, Inc.*, 946 F.2d 850, 862 (Fed. Cir. 1991)).

118. *Id.*

119. *Id.* at 1239 (quoting *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1457 (Fed. Cir. 1998)) (omissions in original).

120. *Id.* The applicant had only distinguished the prior art reference based on its lack of a housing, not on its inability to recirculate air. The court found that no reasonable competitor skilled in the art could conclude that the applicant surrendered coverage of machines that do not recirculate air. *Id.*

have is where they were actually practicing the prior art that is the basis of an estoppel argument.

#### VII. APPLICATION OF AMENDMENT (*FESTO*) ESTOPPEL TO MEANS-PLUS-FUNCTION CLAIM LIMITATIONS

The application of amendment estoppel to means-plus-function claim limitations is a two-part analysis owing to the presence of equivalents in both the literal and doctrine of equivalents contexts. The first part is the application of equivalents under the doctrine of equivalents. This application is very straightforward and has been applied recently by the Federal Circuit to preclude infringement under the doctrine of equivalents. In *Lockheed Martin Corp. v. Space Systems / Loral Inc.*,<sup>121</sup> the court applied the analysis as outlined above to determine that amendment estoppel was invoked, thereby making equivalents under the doctrine of equivalents unavailable for a means-plus-function claim limitation. Therefore, it is clear that amendment estoppel can bar the application of the doctrine of equivalents to a means-plus-function limitation.

The more difficult question is whether amendment estoppel also eliminates all literal equivalents under section 112 paragraph six. The Federal Circuit has not yet addressed this issue; although it easily could have in *Lockheed*.<sup>122</sup> In that case, however, both parties agreed that there could be no literal infringement so the issue was no longer pending before the court.<sup>123</sup> Because the Federal Circuit has not given any guidance on the application of amendment estoppel to literal equivalents, one must use analogies to the doctrine of equivalents and public policy to predict the likely outcome of attempts to eliminate all equivalents from means-plus-function claim limitations.

The first sub-issue is whether the Federal Circuit has the power to override the statutory language under certain circumstances. This issue likely turns on whether section 112, paragraph six is constitutional. Such analysis is beyond the scope of this article. However, the language of the statute does not explicitly provide a definition or test for such equivalents.<sup>124</sup> Therefore, it is likely that

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121. 249 F.3d 1314, 1326-27 (Fed. Cir. 2001).

122. *Id.*

123. *Id.* at 1325.

124. Of course, one could argue that the Supreme Court laid out a clear mandate in *Graver Tank*, 339 U.S. 605 (1950). However, the issues in that case did

the court has the ability to define the scope of available equivalents under some circumstances so narrowly that it is *defacto* eliminated.

The second sub-issue is whether the Federal Circuit should eliminate literal equivalents under certain common circumstances. The public policy behind notice seems to demand such elimination. In fact, means-plus-function claim limitations inherently violate the notice policy because a potential infringer cannot clearly predict the scope of claims containing such language. The potential infringer can only rely on the intrinsic evidence, which does not define the scope of equivalents.

Moreover, the analyses applied to the structural equivalents of means-plus-function claim limitations and the structural analysis under the doctrine of equivalents are identical.<sup>125</sup> The question is whether the doctrine of equivalents permits an extension of the structural scope beyond the scope provided by literal equivalents. Logically, the scope of the two is the same because each is applied to the claimed/described structures concurrently, and not consecutively. The case law does not show an application of the analysis where the court first construed the literal equivalents and then evaluated the equivalents of the literal equivalents under the guise of the doctrine. Therefore, one could argue that it is illogical to permit the same scope of structural equivalents when that same scope of equivalents is not permitted under the doctrine of equivalents due to amendment estoppel.

However, one cannot escape the effect of codification of the literal equivalents inherent to means-plus-function claims.<sup>126</sup> Because literal equivalents are provided by statute, the same equitable principles that bar the application of the doctrine of equivalents may not be relevant to the literal equivalents consideration. The statute provides notice to potential infringers that literal equivalents apply to means-plus-function claims. One could argue that short of a clear disclaimer, the scope of literal equivalents is the full scope potentially available. This is analogous to the flexible bar approach to the doctrine of equivalents analysis in the pre-*Festo* era of patent law.

There are potential arguments to be made both in support of, and in opposition to, the elimination of literal equivalents due to

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not involve means-plus-function claim language but, rather, involved only the doctrine of equivalents.

125. *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352 (Fed. Cir. 2000).

126. *See* 35 U.S.C. § 112, ¶ 6 (2001).

the application of amendment estoppel. The Federal Circuit has not provided the courts or the legal community with any guidance on the subject. The application of public policy and analogies are of no guidance to help predict the possible outcome of a court's decision on the issue. One can only hope that when the Supreme Court addresses this issue in its consideration of the Federal Circuit's *Festo* decision, it will either clarify this quandary or eliminate the issue by reinstating the old flexible bar approach.

#### VIII. CONCLUSION

Means-plus-function claim limitations are frequently used in patent claims. Therefore, both patent prosecutors and litigators must be well versed in the construction of such specialized claim language. They must also be able to review prosecution file histories and apply prosecution history estoppel to determine the scope of claims containing means-plus-function language to predict the likelihood of infringement for their clients. The Federal Circuit has provided a body of law to guide these entities in their evaluation of the means-plus-function construction, infringement and argument estoppel analyses. However, there is only speculation and conjecture surrounding the application of amendment estoppel to means-plus-function claims. The Federal Circuit is issuing new decisions with respect to means-plus-function claims on a regular basis, and it is only a matter of time before this issue is addressed head-on or rendered moot by the Supreme Court's much anticipated *Festo* ruling.