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## **WHEN A LACK OF EQUIVALENCE CAN STILL BE EQUIVALENT -LITIGATING INFRINGEMENT OF MEANS- PLUS-FUNCTION CLAIMS**

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### **I. INTRODUCTION**

In the spring of 1997, the Supreme Court re-affirmed the viability of the doctrine of equivalents as an alternative theory<sup>40\_IDEA\_581)\_and\_footnotes(n1);FTNT n1</sup> upon which to base a finding of infringement.<sup>40\_IDEA\_581)\_and\_footnotes(n2);FTNT n2</sup> Since then, confusion has surrounded the application of that doctrine to the infringement of "means-plusfunction" claims under 35 U.S.C. § 112, Paragraph 6.<sup>40\_IDEA\_581)\_and\_footnotes(n3);FTNT n3</sup> This uncertainty raises two distinct issues that the Court of Appeals for the Federal Circuit ("CAFC") continues to grapple with. The first issue is defining the interplay or relationship between the concept of "equivalents" in the doctrine of equivalents, and the reference to "equivalents" found in § 112, Paragraph 6, which authorizes the drafting of claims in the "meansplus-function" format.<sup>40\_IDEA\_581)\_and\_footnotes(n4);FTNT n4</sup> The second issue is to what extent the doctrine of equivalents can be applied to means-plus-function claims when no literal infringement has been found.

Although the relationship between the doctrine of equivalents and means-plus-function claims was originally somewhat nebulous, Warner-Jenkinson Co. v. Hilton Davis Chemical Co.<sup>40\_IDEA\_581)\_and\_footnotes(n5);FTNT n5</sup> exacerbated the problem. The Petitioner in Warner-Jenkinson argued that the doctrine of equivalents did not survive the 1952 revision of the Patent Act because, in part, "the doctrine was implicitly rejected as a general matter by Congress' specific and limited inclusion of the doctrine in one section regarding 'means' claiming, § 112, Paragraph 6."<sup>40\_IDEA\_581)\_and\_footnotes(n6);FTNT n6</sup>

The Supreme Court rejected this argument, but in doing so commented on the relationship between the doctrine of equivalents and § 112, Paragraph 6 means-plus-function claims.

Section 112, Paragraph 6, now expressly allows so-called "means" claims, with the proviso that application of the broad literal language of such claims must be limited to only those means that are "equivalent" to the actual means shown in the patent specification. This is an application of the doctrine of equivalents in a restrictive role, narrowing the application of broad literal claim elements.<sup>40\_IDEA\_581)\_and\_footnotes(n7);.FTNT n7</sup>

After rejecting the additional issues raised by Petitioner, the Court set forth broad parameters concerning the scope and application of the doctrine of equivalents, and left to the discretion of the Federal Circuit, the task of refining these broad principles into finite tests.

With these limiting principles as a backdrop, we see no purpose in going further and micromanaging the Federal Circuit's particular word choice for analyzing equivalence. We expect that the Federal Circuit will refine the formulation of the test for equivalence in the orderly course of case-by-case determinations, and we leave such refinement to that court's sound judgment in this area of its special expertise.<sup>40\_IDEA\_581)\_and\_footnotes(n8);.FTNT n8</sup>

The Federal Circuit has been hard at work fulfilling the Supreme Court's mandate ever since. A series of cases, beginning in 1998 and continuing through late 1999, elucidate the concept of the doctrine of equivalents and its relationship with § 112, Paragraph 6 to the extent that the patent litigator now has a clear outline of this relationship, with definitive rules to guide her way.<sup>40\_IDEA\_581)\_and\_footnotes(n9);.FTNT n9</sup>

This article strives to identify and summarize the parameters set by the Federal Circuit since Warner-Jenkinson for construing means-plus-function claims, and for determining when such claims have been infringed -- either literally, or under the doctrine of equivalents. On the path to reach these two objectives, however, two short departures will be made: the first to examine the stated purpose of "equivalence" analysis, and the second to survey the Federal Circuit's latest pronouncement on how to discern whether a claim falls under the purview of § 112, Paragraph 6.

## II. EQUIVALENCE ANALYSES -- PROTECTING THE INVENTION

It is fundamental that to prove literal infringement of a claim,<sup>40\_IDEA\_581)\_and\_footnotes(n10);.FTNT n10</sup> "the patentee must show that the accused device contains every limitation in the asserted claims. If even one limitation is missing or is not met as claimed, there is no literal infringement."<sup>40\_IDEA\_581)\_and\_footnotes(n11);.FTNT n11</sup>

Given the apparent rigidity of this "literal infringement" test, one can easily imagine the ease with which third party "inventors" could modify an invention in relatively minor ways to create their own literally noninfringing "version" of a patented device. To address this problem, the common law doctrine of equivalents developed.<sup>40 IDEA 581) and footnotes(n12);FTNT n12</sup> The purpose of the concept of "equivalents," in the context of both § S 112, Paragraph 6 means-plus-function claims and the doctrine of equivalents, was recently summarized by the Federal Circuit:

Both § S 112, Paragraph 6, and the doctrine of equivalents protect the substance of a patentee's right to exclude by preventing mere colorable differences or slight improvements from escaping infringement, the former, by incorporating equivalents of disclosed structures into the literal scope of a functional claim limitation, and the latter, by holding as infringements equivalents that are beyond the literal scope of the claim. They do so by applying similar analyses of insubstantiality of the differences.<sup>40 IDEA 581) and footnotes(n13);FTNT n13</sup>

Thus, the doctrine of equivalents was developed "to temper unsparing logic and prevent an infringer from stealing the benefit of the invention."<sup>40 IDEA 581) and footnotes(n14);FTNT n14</sup>

Given the differing manner in which "equivalents" are used to protect the essence of an invention from unscrupulous "inventors," depending upon whether a means-plus-function claim has been used, the litigator needs to know how to classify claims and get the court to recognize a claim as being controlled, or not, by § S 112, Paragraph 6. Although the Federal Circuit has provided some guidance in this area, as is often the case, exceptions to straightforward general rules often create an aura of uncertainty.

### III. RECOGNIZING MEANS-PLUS-FUNCTION CLAIMS

35 U.S.C. § S 112, Paragraph 6 permits claims to be drafted in the "means-plus-function" format, and 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 claims shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.<sup>40 IDEA 581) and footnotes(n15);FTNT n15</sup>

The general rules for either including or excluding a claim within the means-plus-function genre are based on the express terms of § S 112, Paragraph 6, and mirror each other. "If the word "means" appears in a claim element in combination with a function, it is presumed to be a means-plus-function element to which § S 112, Paragraph 6 applies."<sup>40 IDEA 581) and footnotes(n16);FTNT n16</sup>

Conversely, the court has stated:

Although use of the phrase "means for" (or "step for") is not the only way to invoke § 112, Paragraph 6, that terminology typically invokes § 112, Paragraph 6 while other formulations generally do not. Therefore, when an element of a claim does not use the term "means," treatment as a means-plus-function claim element is generally not appropriate.<sup>40\_IDEA\_581)\_and\_footnotes(n17);FTNT n17</sup>

Recognizing "means-plus-function" claims becomes more challenging, however, when the exceptions to these rules are considered. The key is whether the claim under consideration possesses or lacks structural or material detail sufficient for performing the function invoked by the suspect claim element. The Federal Circuit has enunciated the exceptions as:

Nevertheless, according to its express terms, § 112, Paragraph 6 governs only claim elements that do not recite sufficient structural limitations. Therefore, the presumption that § 112, Paragraph 6 applies is overcome if the claim itself recites sufficient structure or material for performing the claimed function.

....  
....

However, when it is apparent that the element invokes purely functional terms, without the additional recital of specific structure or material for performing that function, the claim element may be a means-plus-function element despite the lack of express means-plus-function language.<sup>40\_IDEA\_581)\_and\_footnotes(n18);FTNT n18</sup>

Thus, in *York Products, Inc. v. Central Tractor Farm & Family Center*,<sup>40\_IDEA\_581)\_and\_footnotes(n19);FTNT n19</sup> the Federal Circuit construed a claim for a pick-up truck bed liner not to contain a means-plus-function element, even though the term "means" was used, since "the claim language following [the term] 'means' . . . [was not] connected to a recited function," but instead set forth the "structure" of ridge members necessary to manufacture a liner.<sup>40\_IDEA\_581)\_and\_footnotes(n20);FTNT n20</sup> On the other hand, in *Mas-Hamilton Group v. LaGard, Inc.*,<sup>40\_IDEA\_581)\_and\_footnotes(n21);FTNT n21</sup> the court found that a claim for an electronic combination lock, which included a "lever moving element," should be construed as a means-plus-function claim because, "even though the catch phrase is not used, the limitation's language does not provide any structure."<sup>40\_IDEA\_581)\_and\_footnotes(n22);FTNT n22</sup> The court went on to hold that "the limitation is drafted as a function to be performed rather than definite structure or materials."<sup>40\_IDEA\_581)\_and\_footnotes(n23);FTNT n23</sup>

The inherent difficulty surrounding the application of these seemingly rational and straightforward exceptions to the general means-plus-function rules set forth above is apparent in *Al-Site Corp. v. VSI International, Inc.*<sup>40\_IDEA\_581)\_and\_footnotes(n24);FTNT n24</sup> In *AlSite*, the district court

construed two different claim elements as requiring § 112, Paragraph 6 treatment, absent use of the standard "means for" language, and instructed the jury accordingly.<sup>40\_IDEA\_581)\_and\_footnotes(n25);.FTNT n25</sup> The invention in *Al-Site* was a retail display card used to merchandise non-prescription reading glasses.<sup>40\_IDEA\_581)\_and\_footnotes(n26);.FTNT n26</sup> The Federal Circuit disagreed with the district court's analysis of the claim language at issue and reversed, stating, "although these claim elements include a function, namely, 'mounting a pair of eyeglasses,' the claims themselves contain sufficient structural limitations for performing those functions. . . . This structure removes this claim from the purview of § 112, Paragraph 6."<sup>40\_IDEA\_581)\_and\_footnotes(n27);.FTNT n27</sup>

Although a remand was not necessary in *Al-Site* "because the jury found infringement under the trial court's more restricted reading of the claims,"<sup>40\_IDEA\_581)\_and\_footnotes(n28);.FTNT n28</sup> it is obvious that improper claim classification can prove costly in terms of time, resources and economic opportunity.

In holding that a remand was not necessary, the Federal Circuit hinted at the reason claim classification is so important.<sup>40\_IDEA\_581)\_and\_footnotes(n29);.FTNT n29</sup> Although statutory "equivalents" in § 112, Paragraph 6 means-plus-function claims somewhat broaden the boundaries of a means-plus-function element, means-plus-function elements are restricted, in the first instance, to the structure, material or acts described in the specification.<sup>40\_IDEA\_581)\_and\_footnotes(n30);.FTNT n30</sup> Consequently, in comparison to claims that do not contain means-plusfunction limitations, claims subject to § 112, Paragraph 6 are generally viewed to be more narrow in scope.<sup>40\_IDEA\_581)\_and\_footnotes(n31);.FTNT n31</sup> Accordingly, an accused device can come closer to a claimed invention without infringing, either literally or under the doctrine of equivalents, when means-plusfunction claim elements are used.

This point is made clear when one recalls the Supreme Court's cursory mention of means-plus-function claims in *Warner-Jenkinson*, wherein, with reference to the express terms of § 112, Paragraph 6, the Court stated, "This is an application of the doctrine of equivalents in a restrictive role, narrowing the application of broad, literal claim elements."<sup>40\_IDEA\_581)\_and\_footnotes(n32);.FTNT n32</sup>

The Federal Circuit expounded upon this point in *Al-Site*:

Section 112, Paragraph 6 restricts the scope of a functional claim limitation as part of a literal infringement analysis. Thus, an equivalent under § 112, Paragraph 6 informs the claim meaning for a literal infringement analysis. The doctrine of equivalents, on the other hand, extends enforcement of claim terms beyond their literal reach . . .  
<sup>40\_IDEA\_581)\_and\_footnotes(n33);.FTNT n33</sup>

In order to properly and effectively plan litigation strategies, defenses or discovery, the patent litigator should ensure that the claims at issue are appropriately classified as warranting "means-plusfunction" treatment, or not. Such classification should be done as early in the litigation as possible. Where necessary, contention interrogatories or requests

for admissions can be used to obtain an agreement among the parties as to claim classification. Where doubt or confusion persists as to claim interpretation, a preliminary Markman hearing should be sought.<sup>40\_IDEA\_581)\_and\_footnotes(n34);FTNT n34</sup> Only when claims are properly classified can they be accurately construed.<sup>40\_IDEA\_581)\_and\_footnotes(n35);FTNT n35</sup>

As will be seen, singular rules apply to the construction of claims subject to § S 112, Paragraph 6, and the corresponding application of the doctrine of equivalents.

#### IV. MEANS-PLUS-FUNCTION CLAIM ELEMENTS

Although reference is commonly made to "means-plus-function claims," it should be noted that claims are written in means-plus-function format whenever "an element in a claim . . . is expressed as a means or step for performing a specified function . . . ."<sup>40\_IDEA\_581)\_and\_footnotes(n36);FTNT n36</sup> Consequently, it may be more appropriate to speak of means-plus-function elements of a claim, or claims incorporating means-plus-function elements, rather than just "means-plus-function claims." Hence, a claim subject to § S 112, Paragraph 6 may contain one or more means-plus-function elements.<sup>40\_IDEA\_581)\_and\_footnotes(n37);FTNT n37</sup>

This distinction is important for a few reasons. First, only means-plus-function elements will be narrowly construed under § S 112, Paragraph 6 as limited to the "structure, material, or acts described in the specification and equivalents thereof."<sup>40\_IDEA\_581)\_and\_footnotes(n38);FTNT n38</sup> A claim's remaining elements will be subject to ordinary rules of construction and the broader application of the doctrine of equivalents.<sup>40\_IDEA\_581)\_and\_footnotes(n39);FTNT n39</sup>

Secondly, the Federal Circuit held that it is improper to "deconstruct" a structure in an accused device and compare it component by component to the claimed structure or its "equivalent" when performing a means-plus-function infringement analysis.<sup>40\_IDEA\_581)\_and\_footnotes(n40);FTNT n40</sup> It may seem logical to do so, however, since traditional infringement analysis requires a showing "that the accused device contains every limitation in the asserted claims."<sup>40\_IDEA\_581)\_and\_footnotes(n41);FTNT n41</sup> However, in a means-plus-function claim, the stated function and corresponding means together comprise the claim element or limitation. A structure's components, in and of themselves, are not considered claim limitations. The Federal Circuit explained this distinction in *Odetics, Inc. v. Storage Technology Corp.*,<sup>40\_IDEA\_581)\_and\_footnotes(n42);FTNT n42</sup> stating:

The individual components, if any, of an overall structure that corresponds to the claimed function are not claim limitations. Rather, the claim limitation is the overall structure corresponding to the claimed function. This is why structures with different numbers of parts may still be equivalent under § S 112, Paragraph 6, thereby meeting the claim limitation. The appropriate degree of specificity is provided by the statute itself; the relevant structure is that which "corresponds" to the claimed function. Further deconstruction or parsing is incorrect.<sup>40\_IDEA\_581)\_and\_footnotes(n43);FTNT n43</sup>

Distinguishing the unique characteristics of means plus function claims will facilitate a greater appreciation of § 112, Paragraph 6 infringement analyses.

## V. MEANS-PLUS-FUNCTION INFRINGEMENT ANALYSES

### A. General Rules

As with other claims, claims including means-plus-function limitations can only be literally infringed if each and every limitation in the claim, whether or not subject to § 112, Paragraph 6 treatment, is met by the accused device.<sup>40\_IDEA\_581)\_and\_footnotes(n44);FTNT n44</sup> However, means-plus-function elements must be analyzed in a unique fashion. The Federal Circuit commented on this difference in *General Electric Co. v. Nintendo Co.*<sup>40\_IDEA\_581)\_and\_footnotes(n45);FTNT n45</sup>

Claim 12 of the '899 patent contains several limitations written in means-plus-function language. [Claim 12] can only be literally infringed if every such means limitation of that claim is found in Nintendo's accused devices. Furthermore, to find literal infringement of a section 112, Paragraph 6 limitation, the fact-finder must determine whether the accused device performs an identical function to the one recited in the means-plus-function clause . . . . If the identical function is performed, the factfinder must then determine whether the accused device utilizes the same structure or materials as described in the specification, or their equivalents.<sup>40\_IDEA\_581)\_and\_footnotes(n46);FTNT n46</sup>

On the other hand, the doctrine of equivalents, may be used to find infringement in those situations where no literal infringement of a means-plus-function claim has been found for lack of identity of function, even though the "structure or material" used in the accused device is identical or equivalent to the "structure or material" described in the specification.<sup>40\_IDEA\_581)\_and\_footnotes(n47);FTNT n47</sup> "Under § 112, Paragraph 6, the accused device must perform the identical function as recited in the claim element while the doctrine of equivalents may be satisfied when the function performed by the accused device is only substantially the same."<sup>40\_IDEA\_581)\_and\_footnotes(n48);FTNT n48</sup>

Generally, then, literal infringement of means-plus-function claims is found where the accused device performs the identical function to that set forth in the claim limitation, using "structure, material or acts" identical or equivalent to the "structure, material or acts" described in the specification relating to the claimed function.<sup>40\_IDEA\_581)\_and\_footnotes(n49);FTNT n49</sup> In those situations where literal infringement of a means-plus-function claim cannot be found for lack of functional identity, infringement under the doctrine of equivalents will arise when the function of the accused device is equivalent to that of the claim element.<sup>40\_IDEA\_581)\_and\_footnotes(n50);FTNT n50</sup>

These general rules raise interesting issues with regard to the nexus between function and structure, and the relationship between the accused device and claimed invention. Further, such issues can be significant in litigation. For instance, can the structure of the

accused device, which corresponds to the structure described in the specification, perform more functions than those set forth in the claim limitation? What if the structure of the accused device fails to perform unclaimed functions performed by the structure in the specification?

The Federal Circuit was presented with such issues in *Odetics, Inc. v. Storage Technology Corp.*<sup>40 IDEA\_581\_and\_footnotes(n51);FTNT n51</sup> Here, Defendants (collectively referred to as "STK") appealed a trial court finding of infringement of a means-plus-function claim for a robotic tape storage system.<sup>40 IDEA\_581\_and\_footnotes(n52);FTNT n52</sup> STK argued that the structure at issue could not have literally infringed the claimed means-plus-function limitation, because the accused structure could not perform all of the functions performed by the structure described in the specification.<sup>40 IDEA\_581\_and\_footnotes(n53);FTNT n53</sup> The Federal Circuit held that the only critical function requiring identity is that contained in the claim limitation.<sup>40 IDEA\_581\_and\_footnotes(n54);FTNT n54</sup> The presence or absence of other functions is irrelevant.<sup>40 IDEA\_581\_and\_footnotes(n55);FTNT n55</sup> The court reasoned:

A claim limitation written according to § S 112, Paragraph 6 recites a function to be performed. The scope of that functional limitation is, of course, limited to the "corresponding structure, material or acts described in the specification and equivalents thereof." The "corresponding" structure is the structure disclosed as performing the function. That two structures may perform unrelated -- and, more to the point, unclaimed -- functions differently or not at all is simply not pertinent to the measure of § S 112, Paragraph 6 equivalents.<sup>40 IDEA\_581\_and\_footnotes(n56);FTNT n56</sup>

The litigator is taught two fundamental, though critical, lessons by *Odetics*. First, when construing means-plus-function claims, make sure that the litigated "structure" is the "corresponding structure" disclosed as performing the function. Seek judicial clarification if doubt exists, or if claim interpretation disputes unduly impede case resolution. Secondly, focus on the function contained in the means-plus-function claim limitation. Do not allow an opponent to complicate the case by concentrating on the dissimilarity of functions between the claimed structure and the structure of the accused device that are not the same or statutorily equivalent to those in the means plus function element. Such diversionary tactics may confuse the trier of fact.

However, of primary concern when applying the above rules for determining infringement of means-plus-function claims, is the ability to identify "equivalent" structures in the literal infringement analysis, or "equivalent" structures or functions for purposes of the doctrine of equivalents inquiry. The abstractions of equivalence under § S 112, Paragraph 6 and the doctrine of equivalents are akin, with the courts borrowing from the doctrine of equivalents concept to define means-plus-function equivalence under § S 112, Paragraph 6.<sup>40 IDEA\_581\_and\_footnotes(n57);FTNT n57</sup>

#### B. Defining "Equivalents"



The measure of "equivalence," under either § 112, Paragraph 6 or the doctrine of equivalents, is whether the differences between the structure of the accused device and the structure described in the specification or the differences between the accused device and the claimed invention are "insubstantial."<sup>40\_IDEA\_581)\_and\_footnotes(n58);.FTNT n58</sup> With regard to § 112, Paragraph 6 equivalents and the literal infringement of means-plus-function claims, "the proper test for determining whether the structure in an accused device is equivalent to the structure recited in a § 112, Paragraph 6, claim is whether the differences between the structure in the accused device and any disclosed in the specification are insubstantial."<sup>40\_IDEA\_581)\_and\_footnotes(n59);.FTNT n59</sup>

Likewise, concerning the doctrine of equivalents, "a claim that does not literally read on an accused device may nevertheless be infringed under the doctrine of equivalents if the differences between the claim and the accused device are insubstantial."<sup>40\_IDEA\_581)\_and\_footnotes(n60);.FTNT n60</sup>

However, "insubstantiality" of differences for purposes of literal infringement of § 112, Paragraph 6 claims, and for infringement under the doctrine of equivalents, is determined somewhat differently. This difference arises because the statutory equivalence analysis under § 112, Paragraph 6 is narrower in scope than the doctrine of equivalents analysis. The Federal Circuit articulated these related but distinct tests for ascertaining "equivalents" in *Odetics*.<sup>40\_IDEA\_581)\_and\_footnotes(n61);.FTNT n61</sup>

In the doctrine of equivalents context, the following test is often used: if the "function, way or result" of the assertedly substitute structure is substantially different from that described by the claim limitation, equivalence is not established. As we have noted, this tripartite test developed for the doctrine of equivalents is not wholly transferable to the § 112, Paragraph 6 statutory equivalence context. Instead, the statutory equivalence analysis, while rooted in similar concepts of insubstantial differences as its doctrine of equivalents counterpart, is narrower. This is because, under § 112, Paragraph 6 equivalence, functional identity is required; thus the equivalence (indeed, identity) of the "function" of the assertedly substitute structure, material, or acts must first be established in order to reach the statutory equivalence analysis. The content of the test for insubstantial differences under § 112, Paragraph 6 thus reduces to "way" and "result." That is, the statutory equivalence analysis requires a determination of whether the "way" the assertedly substitute structure performs the claimed function, and the "result" of that performance, is substantially different from the "way" the claimed function is performed by the "corresponding structure, acts, or materials described in the specification," or its "result." Structural equivalence under § 112, Paragraph 6 is met only if the differences are insubstantial; that is, if the assertedly equivalent structure performs the claimed function in substantially the same way to achieve substantially the same result as the corresponding structure described in the specification.<sup>40\_IDEA\_581)\_and\_footnotes(n62);.FTNT n62</sup>

Therefore, equivalence for determining the application of the doctrine of equivalents is determined by applying the "function-way-result" test. In contrast, § 112, Paragraph 6 equivalence is determined by applying the truncated "way-result" test, since identity of

function is a prerequisite to undertaking the literal infringement analysis of a means-plus-function claim.

Finally, the litigator must be cognizant of when, and under what circumstances, each test should or can be applied in determining infringement of means-plus-function claims. In certain situations, a lack of literal infringement of a means-plus-function claim will foreclose the application of the doctrine of equivalents test. In others, a means-plus-function claim may only be susceptible to a doctrine of equivalents analysis.

### C. Applying the Correct Test

To find literal infringement of a means-plus-function claim, there must be an identity of function between the structure of the accused device and the structure described in the specification of the invention at issue.<sup>40\_IDEA\_581)\_and\_footnotes(n63);.FTNT n63</sup> In addition, the structure of the accused device must be the same or the equivalent of the structure described in the invention.<sup>s</sup>  
specification.<sup>40\_IDEA\_581)\_and\_footnotes(n64);.FTNT n64</sup>

As discussed above, where an identical or equivalent structure is present, but no literal infringement can be found due to a lack of identity of function, a means-plus-function claim may still be infringed under the doctrine of equivalents if the function of the structure in the accused device is the equivalent of the function in the claim limitation.<sup>40\_IDEA\_581)\_and\_footnotes(n65);.FTNT n65</sup> It seems obvious, then, that if no literal infringement of a means-plus-function claim exists, due to a lack of a same or equivalent structure, the claimed device cannot be infringed under the doctrine of equivalents due to the absence of an essential factor; i.e. a similar or equivalent structure. The Federal Circuit has elucidated:

Our case law clearly provides that equivalence under the doctrine of equivalents requires that each claim limitation be met by an equivalent element in the accused device. Because this requirement is not met for § S 112, Paragraph 6, purposes with respect to one limitation, it is therefore not met in this case for doctrine of equivalents purposes. An element of a device cannot be "not equivalent" and equivalent to the same structure.<sup>40\_IDEA\_581)\_and\_footnotes(n66);.FTNT n66</sup>

If literal infringement of a means-plus-function claim is not shown due to a lack of the same or equivalent structure in the accused device, application of the doctrine of equivalents is foreclosed as a matter of law. The structure of an accused device cannot be "not equivalent" for the purposes of a literal infringement analysis under § S 112, Paragraph 6, and simultaneously "equivalent" under a doctrine of equivalents analysis.

The Federal Circuit recently clarified an issue unique to claims drafted in the means-plus-function format.<sup>40\_IDEA\_581)\_and\_footnotes(n67);.FTNT n67</sup> Equivalence infringement analysis rarely considers whether the technology incorporated into the accused device was known at the time the patent was issued for the claimed invention.<sup>40\_IDEA\_581)\_and\_footnotes(n68);.FTNT n68</sup> Rather, equivalence is determined at the time of infringement.<sup>40\_IDEA\_581)\_and\_footnotes(n69);.FTNT n69</sup> The reason for this is clear: it should make little difference whether the "slight"

modification made to the accused device to escape literal infringement incorporated old or new technology. If the accused device is "equivalent" to the claimed invention, infringement should follow.

However, unlike most claims, the structure of § 112, Paragraph 6 claim elements is limited to the structure described in the specification, or its equivalents.<sup>40 IDEA\_581)\_and\_footnotes(n70);FTNT n70</sup> Logically then, how can the structure of an accused device, which incorporates technology developed well after the patent issued for the claimed invention, have been anticipated to the extent necessary to enable the inventor to disclose the same in her specification so that it can later be found to be an equivalent? The court has explicitly recognized that most inventors are not clairvoyant and cannot be expected to anticipate later-developed technology when drafting means-plus-function claims.<sup>40 IDEA\_581)\_and\_footnotes(n71);FTNT n71</sup>

To illustrate this apparent contradiction, imagine that prior to the advent of computers, a patent issued for a "paper sorting and filing device" that incorporates a "means for sorting." Several years later, personal computers (.PCs.) are introduced and someone develops an accused device that is identical to the paper filing device. However, the accused device incorporates the use of a PC to accomplish the "means for sorting," a technology not anticipated at the time of the original invention. Is it possible to conduct a literal infringement analysis under § 112, Paragraph 6 when the PC was not an anticipated technology and could not have been disclosed, either literally or as an equivalent, in the specification? Will the PC's structure ever be "equivalent" to the disclosed structure for accomplishing the sorting means? Should the inventor be prohibited from taking advantage of the broader protection offered other inventors under the doctrine of equivalents, just because he elected to draft his claim in a means-plus-function format?

These issues were resolved by the Federal Circuit in *Al-Site Corp. v. VSI International, Inc.*<sup>40 IDEA\_581)\_and\_footnotes(n72);FTNT n72</sup> The court held:

One important difference between § 112, Paragraph 6 and the doctrine of equivalents involves the timing of the separate analyses for an "insubstantial change." As this court has recently clarified, a structural equivalent under § 112 must have been available at the time of the issuance of the claim. An equivalent structure or act under § 112 cannot embrace technology developed after the issuance of the patent because the literal meaning of a claim is fixed upon its issuance. An "after arising equivalent" infringes, if at all, under the doctrine of equivalents. In other words, an equivalent structure or act under § 112 for literal infringement must have been available at the time of patent issuance while an equivalent under the doctrine of equivalents may arise after patent issuance and before the time of infringement. An "after arising" technology could thus infringe under the doctrine of equivalents without infringing literally as a § 112, Paragraph 6 equivalent.<sup>40 IDEA\_581)\_and\_footnotes(n73);FTNT n73</sup>

In an attempt to further explain the rationale behind this dichotomy, and to clarify the point that when "after arising" technology is present, the "structure" of the means-plus-

function claim element is not limited to the "equivalent" of the structure disclosed in the specification, but is instead measured against a broader "equivalence" definition under the doctrine of equivalents, the court went on to state:

A proposed equivalent must have arisen at a definite period in time, i.e., either before or after patent issuance. If before, a § S 112, Paragraph 6 structural equivalents analysis applies and any analysis for equivalent structure under the doctrine of equivalents collapses into the § S 112, Paragraph 6 analysis. If after, a non-textual infringement analysis proceeds under the doctrine of equivalents. Patent policy supports application of the doctrine of equivalents to a claim element expressed in means-plus-function form in the case of "after arising" technology because a patent draftsman has no way to anticipate and account for later developed substitutes for a claim element. Therefore, the doctrine of equivalents appropriately allows marginally broader coverage than § S 112, Paragraph 6.40\_IDEA\_581)\_and\_footnotes(n74);.FTNT n74

If an accused device incorporates later-developed technology, a literal infringement analysis under § S 112, Paragraph 6 is inappropriate since the claim drafter could not have anticipated the technology at the time the claim specification was prepared. Technology was "fixed" at the time the means-plus-function claim was drafted, and the drafter had no way to accommodate such technology in the specification.

In addition to ensuring that claims are properly classified at an early stage in the litigation, the trial lawyer should also ascertain whether the accused device incorporates "after developed" technology. Where a means-plus-function claim is involved, and "after developed" technology is present, infringement analysis can proceed under the broader doctrine of equivalents standard, rather than the somewhat narrower § S 112, Paragraph 6 equivalence test.

## VI. CONCLUSION

The doctrine of equivalents was developed at common law to protect the essence of an inventor's brainchild from unscrupulous "inventors" who would make slight modifications to an invention to avoid a claim of literal infringement, and claim this new "creation" as their own. This protection is afforded by granting an inventor patent protection beyond the literal bounds of the patent claims to include "equivalents" of the claimed invention.

When the Patent Act was amended in 1952, Congress added the language of current Paragraph 6 to § S 112 to allow the drafting of claim elements in means-plus-function format.40\_IDEA\_581)\_and\_footnotes(n75);.FTNT n75 In so doing, Congress provided that such a claim "shall be construed to cover the corresponding structure, material or acts described in the specification and equivalents thereof."40\_IDEA\_581)\_and\_footnotes(n76);.FTNT n76

Since 1952, the courts have refined the concept of means-plus-function equivalence under § S 112, Paragraph 6. Generally, means-plus-function equivalence is viewed more narrowly than equivalence under the doctrine of equivalents, because § S 112, Paragraph 6 equivalents are restricted to the structure, material or acts described in the specification.

Consequently, it is incumbent upon the patent litigator to classify claims as early in the litigation as possible to determine whether they will be construed under § S 112, Paragraph 6, or the doctrine of equivalents.

However, even where a means-plus-function claim is presented, if the accused device incorporates technology for accomplishing the claimed function, or its equivalent, which was developed after the patent was issued, the structure of the accused device will be analyzed using the broader doctrine of equivalents concept, rather than § S 112, Paragraph 6 equivalence. The following chart will hopefully assist the trial lawyer in determining whether to analyze a means-plus-function claim under § S 112, Paragraph 6, the doctrine of equivalents, or both, and under what circumstances equivalence can be found.

## VII. MEANS-PLUS-FUNCTION CLAIMS INFRINGEMENT ANALYSES [SEE TABLE IN ORIGINAL]

Literal Infringement -- § S 112, Paragraph  
640\_IDEA\_581)\_and\_footnotes(n77);.FTNT n77

Doctrine of Equivalents Infringement40\_IDEA\_581)\_and\_footnotes(n78);.FTNT  
n78

Doctrine of Equivalents Infringement40\_IDEA\_581)\_and\_footnotes(n79);.FTNT  
n79

n1 In contrast to a finding of "literal" infringement.

n2 See *Warner-Jenkinson Co., v. Hilton Davis Chem. Co.*, 520 U.S. 17, 41 U.S.P.Q.2d (BNA) 1865 (1997).

n3 35 U.S.C. § 112, Paragraph 6 (1994).

n4 Id.

n5 520 U.S. 17, 41 U.S.P.Q.2d (BNA) 1865 (1997).

n6 *Id.* at 25-26, 41 U.S.P.Q.2d at 1870.

n7 *Id.* at 28, 41 U.S.P.Q.2d at 1870.

n8 *Id.* at 40, 41 U.S.P.Q.2d at 1875-76.

n9 See generally *Odetics, Inc. v. Storage Tech. Corp.*, 185 F.3d 1259, 51 U.S.P.Q.2d (BNA) 1225 (Fed. Cir. 1999); *WMS Gaming, Inc. v. International Game Tech.*, 184 F.3d 1339, 51 U.S.P.Q.2d (BNA) 1385 (Fed. Cir. 1999); *General Electric Co. v. Nintendo Co.*, 179 F.3d 1350, 50 U.S.P.Q.2d (BNA) 1910 (Fed. Cir. 1999); *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 50 U.S.P.Q.2d (BNA) 1161 (Fed. Cir. 1999); *C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 48 U.S.P.Q.2d (BNA) 1225 (Fed. Cir. 1998); *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 46 U.S.P.Q.2d (BNA) 1752 (Fed. Cir. 1998); *Cybor Corp. v. FAS Tech., Inc.*, 138 F.3d 1448, 46 U.S.P.Q.2d (BNA) 1169 (Fed. Cir. 1998).

n10 The rule varies slightly for literal infringement of a meansplus-function claim under § 112, Paragraph 6. See discussion *infra* Part V.A.

n11 *WMS Gaming, 184 F.3d at 1350, 51 U.S.P.Q.2d at 1392* (quoting *Mas-Hamilton Group v. LaGard, Inc., 156 F.3d 1206, 1211, 48 U.S.P.Q.2d (BNA) 1010, 1014-15 (Fed. Cir. 1998)*).

n12 See *Graver Tank & Mfg. Co. v. Linde Air Prod. Co., 339 U.S. 605, 607-09, 85 U.S.P.Q. (BNA) 328, 329-31 (1950)* (providing a brief, then-current history of the development of the doctrine of equivalents).

n13 *WMS Gaming, 184 F.3d at 1353, 51 U.S.P.Q.2d at 1395* (citing *Chiuminatta Concrete Concepts, 145 F.3d at 1310, 46 U.S.P.Q.2d at 1758 (Fed. Cir. 1998)*).

n14 *Graver Tank, 339 U.S. at 608, 85 U.S.P.Q. at 330.*

n15 35 U.S.C. § 112, Paragraph 6 (1994).

n16 *Al-Site Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 1318, 50 U.S.P.Q.2d (BNA) 1161, 1166 (Fed. Cir. 1999)*.

n17 *Id.* (citations omitted in original).

n18 *Id.* (citations omitted in original).

n19 *99 F.3d 1568, 40 U.S.P.Q.2d (BNA) 1619 (Fed. Cir. 1996)*.

n20 *Id. at 1574, 40 U.S.P.Q.2d at 1624.*

n21 *156 F.3d 1206, 48 U.S.P.Q.2d (BNA) 1010 (Fed. Cir. 1998)*.

n22 *Id. at 1213, 48 U.S.P.Q.2d at 1016.*

n23 *Id. at 1213, 48 U.S.P.Q.2d at 1016.* Since the use of "meansplus-function" language under § 112, Paragraph 6 is entirely voluntary on the part of the claim drafter, it can be argued that one should not presume the drafter intended to invoke the narrowing effect of § 112, Paragraph 6 absent a clear intent to do so. It has been suggested by Professor Janice Mueller, of The John Marshall Law School in Chicago, that if "means-plus-function" language is not used and a claim lacks sufficient structure, it should be held indefinite under § 112, Paragraph 2, rather than being treated as a means-plus-function claim. The Federal Circuit will need to address when and under what circumstances a combination claim lacking sufficient structure should be treated as indefinite rather than as a means-plus-function claim. However, a fair reading of the entire *Mas-Hamilton* claim, which includes the "lever moving element" referred to above, could lead one to the conclusion that the drafter intended to invoke the provisions of § 112, Paragraph 6. Claim 3 provides in part:

An electronic combination lock . . . comprising . . . reasonable means for maintaining the moveable lever in a substantially stationary position disengaged from the cam wheel and independent of rotational movement of the cam wheel; and a substantially non-resilient lever moving element for moving the lever from its disengaged position for engaging the protrusion of the lever with the cam surface on the cam wheel so that rotation of the cam wheel thereafter in the given direction changes the locking

mechanism from the locked condition to the unlocked condition; and wherein the cam wheel further includes means for moving the lever moving element upon rotation of the cam wheel . . . .

U.S. Patent No. 5,307,656 issued to Gartner et al. (May 3, 1994) (High Security Electronic Dial Combination Lock) (emphasis added).

n24 *174 F.3d 1308, 50 U.S.P.Q.2d (BNA) 1161 (Fed. Cir. 1999)*.

n25 *Id. at 1314-18*.

n26 *Id. at 1314, 50 U.S.P.Q.2d at 1163*.

n27 *Id. at 1318, 50 U.S.P.Q.2d at 1167*.

n28 *Id. at 1323, 50 U.S.P.Q.2d at 1170*.

n29 See *id. at 1320, 50 U.S.P.Q.2d at 1168*.

n30 See 35 U.S.C. § 112, Paragraph 6 (1994).

n31 See *Al-Site, 174 F.3d at 1320, 50 U.S.P.Q.2d at 1168*.

n32 *Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 28, 41 U.S.P.Q.2d (BNA) 1865, 1870 (1997)*.

n33 *Al-Site, 174 F.3d at 1320, 50 U.S.P.Q.2d at 1168* (citation omitted in original).

n34 *Markman v. Westview Instruments, Inc., 517 U.S. 370, 388-91, 38 U.S.P.Q.2d (BNA) 1461, 1470-71 (1996)* (holding that interpretations of terms of art within a claim is within the province of the court).

n35 See, e.g., *Pirelli Cable Corp. v. Ciena Corp., 988 F. Supp. 424, 433-34 (D. Del. 1997)*; *Level One Communications, Inc., v. Seeq Tech. Inc., 987 F. Supp. 1191, 1205-06 (N.D. Cal. 1997)* (deciding whether claims should be afforded "means-plus-function" treatment under § 112, Paragraph 6 using Markman mandated claim construction hearings).

n36 35 U.S.C. § 112, Paragraph 6 (1994) (emphasis added).

n37 See, e.g., *Odetics, Inc. v. Storage Tech. Corp., 185 F.3d 1259, 1264, 51 U.S.P.Q.2d (BNA) 1225, 1227 (Fed. Cir. 1999)* (claim 9 of robotic tape storage system contained two means-plus function elements); *WMS Gaming Inc. v. International Game Tech., 184 F.3d 1339, 1346-47, 51 U.S.P.Q.2d (BNA) 1385, 1390 (Fed. Cir. 1999)* (claim 1 of electronic slot machine contained four means-plus-function elements); *Mas-Hamilton Group v. LaGard, Inc., 156 F.3d 1206, 1213, 48 U.S.P.Q.2d (BNA) 1010, 1016 (Fed. Cir. 1998)* (claim 3 of electronic combination lock contained one means-plus-function element).

n38 35 U.S.C. § 112, Paragraph 6 (1994).

n39 See *General Elec. Co. v. Nintendo Co., 179 F.3d 1350, 1360, 50 U.S.P.Q.2d (BNA) 1910, 1917-18 (Fed. Cir. 1999)*.

n40 For example, assume a claim incorporates the element "means for turning mixing mechanism." The specification and drawings disclose the structure employed to turn the mixing mechanism as an electric motor with the mixing mechanism attached directly to the motor's shaft. A finding of equivalent structure would not necessarily be foreclosed just because an accused device incorporated a different structure with additional parts to perform the same "turning" function -- such as an electric motor geared to engage the mixing mechanism.

n41 *WMS Gaming*, 184 F.3d at 1350, 51 U.S.P.Q.2d at 1392.

n42 185 F.3d 1259, 51 U.S.P.Q.2d (BNA) 1225 (Fed. Cir. 1999).

n43 *Id.* at 1268, 51 U.S.P.Q.2d at 1230 (citations omitted in original).

n44 See 35 U.S.C. § 271 (1994 & Supp. IV 1998).

n45 179 F.3d 1350, 50 U.S.P.Q.2d (BNA) 1910 (Fed. Cir. 1999).

n46 *Id.* at 1354-55, 50 U.S.P.Q.2d at 1913-14.

n47 See *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1320-21, 50 U.S.P.Q.2d (BNA) 1161, 1168 (Fed. Cir. 1999).

n48 *Id.*

n49 *General Elec. Co.*, 179 F.3d at 1355, 50 U.S.P.Q.2d at 1914.

n50 See *Al-Site Corp.*, 174 F.3d at 1320-21, 50 U.S.P.Q.2d at 1168.

n51 185 F.3d 1259, 51 U.S.P.Q.2d (BNA) 1225 (Fed. Cir. 1999).

n52 See *id.* at 1263, 51 U.S.P.Q.2d at 1226-27.

n53 See *id.* at 1269, 51 U.S.P.Q.2d at 1231.

n54 See *id.* at 1270-71, 51 U.S.P.Q.2d at 1232.

n55 See *id.*

n56 *Id.* (citations omitted in original).

n57 See *WMS Gaming Inc. v. International Game Tech.*, 184 F.3d 1339, 1350-52, 51 U.S.P.Q.2d (BNA) 1385, 1392-94 (Fed. Cir. 1999).

n58 See *id.*

n59 *Id.* at 1351, 51 U.S.P.Q.2d at 1393.

n60 *Id.* at 1352, 51 U.S.P.Q.2d at 1394.

n61 185 F.3d 1259, 51 U.S.P.Q.2d (BNA) 1225 (Fed. Cir. 1999).

n62 *Id.* at 1267, 51 U.S.P.Q.2d at 1229-30 (citations omitted in original).

n63 See *id.*

n64 See *id.*

n65 See *WMS Gaming Inc. v. International Game Tech.*, 184 F.3d 1339, 1353, 51 U.S.P.Q.2d (BNA) 1385, 1395 (Fed. Cir. 1999).



n66 *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1311, 46 U.S.P.Q.2d (BNA) 1752, 1758 (Fed. Cir. 1998) (holding that wheels on the accused device, a concrete saw that performed the same function of supporting the surface of the concrete to prevent spalling and chipping during cutting, were not an equivalent structure to the flat skid plate of the patented invention for literal infringement of the "means... for supporting the surface of the concrete" element of the claim under § 112, Paragraph 6, nor under a doctrine of equivalents analysis). "There is no policy-based reason why a patentee should get two bites at the apple." *Id.*

n67 See *Al-Site Corp. v. VSI Int'l., Inc.*, 174 F.3d 1308, 50 U.S.P.Q.2d (BNA) 1161 (Fed. Cir. 1999).

n68 See *Texas Instruments, Inc. v. United States Int'l Trade Comm.*, 805 F.2d 1558, 1563, 231 U.S.P.Q. (BNA) 833, 835 (Fed. Cir. 1986).

n69 See *id.*

n70 See 35 U.S.C. § 112, Paragraph 6 (1994).

n71 See *Al-Site Corp.*, 174 F.3d at 1320 & n.2, 50 U.S.P.Q.2d at 1168 & n.2.

n72 174 F.3d 1308, 50 U.S.P.Q.2d (BNA) 1161 (Fed. Cir. 1999).

n73 *Id.* at 1320, 50 U.S.P.Q.2d at 1168 (citations omitted in original).

n74 *Id.* at 1320 n.2, 50 U.S.P.Q.2d at 1177 n.2 (emphasis added).

n75 35 U.S.C. § 112, Paragraph 6 (1994).

n76 *Id.* Congress specifically amended § 112 to allow drafting of claims in the means-plus-function format, thereby legislatively overruling the Supreme Court's decision in *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1, 71 U.S.P.Q. (BNA) 175 (1946) (holding a combination claim that used functional language at the exact point of novelty invalid for indefiniteness). See *In re Fuetterer*, 319 F.2d 259, 264 n.11, 138 U.S.P.Q. (BNA) 217, 223 n.11 (C.C.P.A. 1963); *In re Donaldson Co.*, 16 F.3d 1189, 1194, 29 U.S.P.Q.2d (BNA) 1845, 1849 (Fed. Cir. 1994).

n77 See *General Elec. Co. v. Nintendo Co.*, 179 F.3d 1350, 1354-55, 50 U.S.P.Q.2d (BNA) 1910, 1917-18 (Fed. Cir. 1999).

n78 Where structure is analyzed under § 112, Paragraph 6, and function is analyzed under the doctrine of equivalents. See *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1320-21, 50 U.S.P.Q.2d (BNA) 1161, 1168 (Fed. Cir. 1999).

n79 See *id.* Where both structure and function are analyzed under the doctrine of equivalents.