

United States District Court,
N.D. Illinois.

PAVE TECH, INC. and Stephen Jones,
Plaintiffs.

v.

SNAP EDGE CORPORATION, Fred Strobl, Albert L. Litwin, Jack Glatt and Bradley Legare,
Defendants.

Feb. 10, 1997.

Patentee brought action against competitor, alleging infringement of patent claiming an edge restraint for paving stones. On report and recommendation of Ashman, United States Magistrate Judge, the District Court, Andersen, J., held that: (1) means plus function analysis was properly used when construing patent claims; (2) connecting strip means and "base strip extension means" claimed in patent were not required to extend continuously along length of vertical strip restraining means; (3) term "substantial," when considered in light of entire claimed invention, was as accurate as subject matter permitted and provided sufficient guidance to one skilled in the art of paving stone installations; and (4) patent claims were properly construed as matter of law.

Report and recommendation adopted.

33,500. Cited.

Terry M. Cosgrove, Peterson & Ross, Chicago, IL, Donald D. Evenson, John C. Lenahan, Evanson, Wands, Edwards, Lenahan & McKeown, Washington, DC, for Plaintiffs.

Martin L. Stern, Laff, Whitesel, Conte & Saret, Chicago, IL, James H. Marsh, Jr., Staas and Halsey, Washington, DC, for Defendants.

MEMORANDUM OPINION AND ORDER

ANDERSEN, District Judge.

On July 2, 1996, Magistrate Judge Martin Ashman filed and served upon the parties his Report and Recommendation regarding construction of certain claims at issue in this infringement suit. On August 7, 1996, the Magistrate Judge entered an amendment to the Report and Recommendation (both reports are collectively referred to as the "Magistrate Judge's Report"). Both plaintiffs and defendants have filed objections to the Magistrate Judge's Report. For the reasons stated below, we deny all objections to the Report and Recommendation.

BACKGROUND

In February, 1990, plaintiffs filed this action against defendants for patent infringement of United States Reissue Patent Re. 33,550 (the "reissue patent"). The reissue patent describes and claims an edge restraint for paving stones.

To determine whether or not the defendants' edge restraint infringes any of the claims in the reissue patent, a two-step analysis is required. The first step requires the claims to be interpreted, and the second step is to compare the properly construed claims to the device accused of infringing. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed.Cir.), *aff'd* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). According to the *Markman* decision, the first step, claim construction, is a matter of law for the court to decide. *Id.* at ----, 116 S.Ct. at 1388.

The *Markman* court held that "in a case tried to a jury, the Court has the power and obligation to construe as a matter of law the meaning of language used in the patent claim." *Markman*, 52 F.3d at 979. *Markman* went on to analogize the construction of a claim to a statutory interpretation, stating that a court looks to the language of the statute and construes it "according to the traditional tools of statutory construction, including certain well known canons of construction." *Id.* at 987. Well known canons of construction likewise apply to patent claims—one of the most important of which is that the words of the claim should be given their ordinary and accustomed meaning, unless it appears that the inventor used them differently. *Hoechst Celanese Corp. v. BP Chemicals, Ltd.*, 78 F.3d 1575, 1578 (Fed.Cir.1996).

In this case, the defendants moved the court for a ruling on the claim construction prior to the jury trial. The defendants filed a dispositive motion to seek the court's construction of the claims as a matter of law, as is permitted by the *Markman* decision. The Magistrate Judge granted the defendants' motion for a claim construction prior to the trial. Accordingly, both plaintiffs and defendants submitted motions for judgment as a matter of law. Oral argument was held, and the Magistrate Judge then rendered his Report and Recommendation, which was amended upon reconsideration of the issues.

In the Magistrate Judge's Report, the meaning of language in the claims asserted was set forth dispositively as a matter of law. The Magistrate Judge addressed both independent claims 115 and 144, as well as the other dependent claims which were asserted. With respect to the dependent claims, the Magistrate Judge adopted plaintiffs' interpretations in view of defendants failure to present any disputed issues with respect to those dependent claims.

Regarding claims 115 and 144, the Magistrate Judge set forth a full and complete claim construction on pages 15-20 of the Report. Furthermore, the Magistrate Judge ruled on each of the specific arguments made by defendants with respect to claims 115 and 144. Finally, the Magistrate Judge's Report set forth the relevant factual findings with respect to the background and prosecution history of the invention claimed in the reissue patent. Both plaintiffs and defendants have filed objections to the Magistrate Judge's Report.

DISCUSSION

I. Plaintiffs' Objections

Plaintiffs raise four objections to the Report. First, plaintiffs object to the Magistrate Judge's interpretation that the "substantially vertical strip restraining means" element in claim 115 is subject to means plus function interpretation under 35 U.S.C. sec. 112, par. 6. Plaintiffs claim that paragraph 6 does not apply. Second, even if paragraph 6 of section 112 does apply, plaintiffs object to the inclusion of the relative thickness in the interpretation since the thickness of one component with respect to the thickness of another component has nothing to do with the "functions" recited for the vertical strip and base strip. Third, plaintiffs object to the interpretation of claim 115 which requires the inclusion of the manufacturing limitation of extrudability of the plastic material. Finally, plaintiffs object to the interpretation of claim 115 which requires the functionality of "optimum force conversion," "increased flexibility," and "ease of cutting."

A. Whether Means Plus Function Analysis Applies to the "Substantially Vertical Strip Restraining Means" Element in Claim 115

[1] The Magistrate Judge concluded that the "substantially vertical strip restraining means" element in claim 115 is ripe for means plus function interpretation under 35 U.S.C. sec. 112, par. 6 (hereinafter "112(6)"). Plaintiffs claim that this element of claim 115 should not be subject to the means plus function interpretation. FN1

FN1. In the Report, the Magistrate Judge notes that plaintiffs proceeded through most of this case conceding that this element was a means plus function element.

Plaintiffs contend that claim 115 contains sufficient structure to define the "substantially vertical strip restraining means" element which obviates the need for means plus function analysis. Plaintiffs argue that the strip is the means and that a common definition of the word "strip" plus the stated description of the element having upper and lower regions and inside and outside surfaces defines the function and structure of this element. Further, plaintiffs claim that this element is not vague but rather encompasses any strip arranged vertically having the various regions and surfaces recited in claim 115. Accordingly, plaintiffs argue that the vertical strip element of claim 115 should be interpreted without reference to 112(6).

We find that the Magistrate Judge carefully considered the record and correctly concluded, as a matter of law, that the "substantially vertical strip restraining means" element recited in claim 115 is subject to interpretation under 112(6). As the Magistrate Judge noted, this court must interpret the claims of a patent as they are written, not as plaintiffs wish they were written. In this case, the element contains the term "means," a very significant term of art which cannot be cast off so easily.

The Magistrate Judge found that claim 115 does not contain sufficient structure to define this element. The recitations merely tell what it does-defines a boundary, receives horizontal forces, and restrains. The recitations also describe where it is located-one surface facing the hard surface means and the other facing away. The Magistrate Judge found that these recited attributes do not take this element outside the purview of means plus function analysis. Under 35 U.S.C. sec. 112(6), interpretation of this claimed means element must be construed so as to "cover the corresponding structure, materials, or acts described in the specification and equivalents thereof." We agree with the Magistrate Judge's conclusions, and reject plaintiffs' objections with regard to this issue.

B. Whether References to Relative Thicknesses of the Vertical and Base Strips Should be Deleted

[2] Plaintiffs argue that even if the means plus function analysis is proper, any reference to the relative thickness of the "vertical strip restraining means" with respect to the other components is irrelevant to its function and should not be included in this court's interpretation of the structure. Plaintiffs argue that the reissue patent does not attribute any function to the relative thickness of the strips. Plaintiffs claim that the functions identified by the Magistrate Judge are functions of the structure of the vertical strip and not its thickness relative to the other components of the invention.

The Magistrate Judge disagreed with plaintiffs' position because the important functions of this element are defining a boundary around hard surface means, receiving the substantially horizontal forces, and restraining. We find, as did the Magistrate Judge, that the relative thickness is an important structural guide for these functions attributed to the "vertical strip restraining means;" and must be included in any interpretation of this element.

Plaintiffs next claim that the thickness or thinness of the base strip extension means in relation to the other elements is also irrelevant. They claim that the relative thickness of the base strip extension means has nothing to do with the function or receiving the vertical forces.

[3] In his Report, the Magistrate Judge states that the base strip extension means is "thinner than the vertical

strip." We agree with the Magistrate Judge that the "base strip extension means" must have sufficient structure and substance to adequately perform its given functions. Therefore, plaintiffs' objections on this issue are overruled.

C. Whether Claim 115 Requires the Inclusion of the Manufacturing Limitation of Extrudability of the Plastic Material

[4] Plaintiffs claim that the Amended Report altered the original interpretation in stating that:

For increased flexibility and ease of cutting, the materials used in the making of the edge restraint includes a plastic material which can be extruded, such as polyvinyl chloride ("PVC"), and aluminum.

Amended Report at p. 7.

To the extent the interpretation requires the use of an extrudable material rather than simply a plastic material, plaintiffs object. Plaintiffs argue that all of the patent claims asserted against the defendants are apparatus claims. These elements are interpreted to include the corresponding structure and materials found in the specification. Accordingly, plaintiffs submit that the materials used are plastic materials. While the patent specification discloses one method of making the invention by extrusion molding, plaintiffs claim that it is improper to include a manufacturing or process limitation in the interpretation of the apparatus invention in claim 115.

We believe that the Magistrate Judge appropriately included the extrudability of the plastic material. We find that the language he used, "the materials used ... includes a plastic material which can be extruded" is appropriate. Therefore, plaintiffs' objection is overruled.

D. Whether Claim 115 Requires the Functionality of "Optimum Force Conversion," "Increased Flexibility," and "Ease of Cutting"

[5] The interpretation given in the Report describes some of the reasons why certain materials and/or dimensions were used, i.e., for ease of cutting, increased flexibility, and force conversion. However, plaintiffs claim that the reasons why such materials and/or dimensions are used has nothing to do with the interpretation of the claims in the patent. Accordingly, to the extent that this language is incorporated into the interpretations, plaintiffs object.

We believe that the Magistrate Judge appropriately interpreted the means plus function clauses of claim 115 to include the functionality of "optimum force conversion," "increased flexibility," and "ease of cutting." Therefore, plaintiffs' objections on this issue are overruled.

II. Defendants' Objections

Defendants claim that the Magistrate Judge failed to apply all the requirements of 35 U.S.C. sec. 112(6) in construing the claims. Defendants claim that the Magistrate Judge made sixteen erroneous rulings, seven errors of omission, an error in the characterization of the Report, and errors in the statement of facts. We will address each of these contentions in turn.

A. Erroneous Rulings

[6] Defendants first argue that the Magistrate Judge incorrectly construed the "connecting strip means" and the "base strip extension means" of claims 115 and 144, particularly by not requiring these elements to extend continuously along the length of "vertical strip restraining means." Defendants argue that each of these elements must be construed to require finite longitudinal dimension for each strip along the extent of the "vertical strip restraining means." Defendants argue that these strip elements must extend continuously

along the length of the "vertical strip restraining means."

Under a means plus function analysis, we must examine the specification to determine the structure. In this case, we agree with the Magistrate Judge that one of the major claims of the patent as a whole is that of flexibility and the ability to define uneven paving areas. "The '550 Reissue Patent provides for several different embodiments of the claimed invention some of which require a solid, continuous edge restraint, and others which require cut outs, depending on the shape of the paved surface." Report at p. 27. Interpreting these strips to be continuous as defendants request would improperly limit the invention to one embodiment. Therefore, defendants' objection is overruled.

Defendants next claim that the Magistrate Judge improperly failed to interpret the function of the "force converting means" of claim 115. Defendants claim that there is no guidance for the jury on this element. However, we think that the Report clearly construes this means element to function as a reinforcement for the support. Therefore, defendants' objection is overruled.

[7] Defendants next argue that the Magistrate Judge improperly construed the "force converting means" so as to include the "reinforcing means" without considering its separate function. Defendants claim that this element must be construed to mandate that a "sufficient amount" of horizontal forces be converted into vertical forces so that the hard surface means is restrained within a boundary "as a consequence of converting." However, we find that nothing in the specification requires that all or some undefined "sufficient" portion of the horizontal force be converted into vertical force by the "force converting means." We agree with the Magistrate Judge that "the specification highlights that force conversion occurs as a factor of the relative height of the strips that comprise the edge restraint system and is aided by the use of stakes." The defendants' interpretation of this element improperly construes the invention as a whole. Therefore, defendants' objection is overruled.

Defendants next argue that the Report improperly refers to certain elements recited in claims 115 and 144 as being essential while ignoring other claim elements. In this objection, defendants for the first time request an interpretation with respect to the "whereas clauses" contained in claim 115 and the "substantially level base surface" and "local ground level" elements in claim 144. However, at no previous time did the defendants raise these terms as disputed issues in their briefing despite ample opportunity to do so. Thus, this objection is overruled, and we find that the interpretation already set forth in the Magistrate's Report is correct.

Defendants next argue that the Magistrate Judge added the limitations of a dependent claim into an independent claim when the independent claim did not contain those same limitations. Defendants cite three alleged instances wherein they claim that the Report is so flawed. However, we find that the Magistrate Judge properly interpreted each claim and that the limitations of the dependent claims were not implied into the independent claims when the independent claims did not contain the same limitations. Therefore, defendants' objections are overruled.

[8] Defendants next claim that the jury will not be properly instructed with regard to how high the vertical strip must be for infringement purposes. However, we find that the Magistrate Judge has provided the appropriate guidance on this issue. The Report states that the vertical strip has "a height dependent upon the size of the paving stones and the magnitude of the forces to which the restraint will be subjected." Therefore, defendants' objection is overruled.

[9] Defendants next argue that the Report improperly defines the vertical strip as being shorter than the base strip without stating the direction of such relationship. However, we find that the Magistrate Judge properly interpreted the elements. The Report states that "[t]he specifications detail a base strip extending perpendicular from the vertical strip, which is thinner than the vertical strip, and longer than the vertical strip is high for optimum force conversion and flexibility." Therefore, we agree with the Magistrate Judge's

conclusions, and defendants' objection is overruled.

Defendants also argue that the Report improperly fails to interpret the "vertical strip restraining means," the "base strip extension means" and the "force converting means" of claim 115 so as to be arranged as a closed hollow profile as described in the specification and drawings. According to defendants, the Report also improperly fails to require the "edge restraint means" of claim 144 to be arranged as a closed hollow profile. However, we find that the Magistrate Judge properly interpreted the elements of claims 115 and 144. Therefore, defendants' objection is denied.

[10] Defendants argue that the Magistrate Judge's finding that the '550 Reissue patent specification sufficiently describes and details the invention claimed in claim 115 is erroneous on grounds that include various due process violations. We find that the Magistrate Judge conclusively interpreted the claims at issue. He did not find any ambiguity that would have precluded him from interpreting the true meaning of the claims. Therefore, we affirm the Magistrate Judge's holding that the description and details in the reissue patent specification support the interpretation of claim 115. Moreover, we find that defendants' argument regarding the sufficiency of the description set forth in claim 115 was considered and rejected by the Magistrate Judge. Therefore, no due process violations have occurred.

[11] Defendants next object to the Magistrate Judge's conclusion that the function of the force converting means is to serve as a "brace" against the horizontal forces of the paving stones. Defendants argue that this interpretation is objectionable because there is no explanation of what "brace" means or how it functions. However, we believe that the term "brace" is self explanatory. Therefore, we uphold the Magistrate Judge's Report on this issue.

[12] Defendants next argue that the Report is in error because it states that the connecting component, cross strip component and base component contain a hole. Defendants claim that this statement is erroneous because it refers to "hole" in the singular. Defendants claim that each of the listed components has been expressed in means-plus-function format in the claims, and the specification and drawings show that there is a stake hole in each of these components. However, we believe that the Magistrate Judge has correctly interpreted the components by stating that "the connecting component, cross strip component and base component contain a hole through which a stake may be driven parallel to the upright component for added stability." Therefore, we overrule defendants' objection.

Defendants next argue that the Report improperly interprets the "force converting means" so as to include only the "connecting strip means" and the "reinforcing means." Defendants claim that the "force converting means" should properly be interpreted as also including the stakes and the holes for the stakes. However, we find that the Magistrate Judge has properly considered and stated the components of the "force converting means" at pages 17-18 of the Report.

Defendants also argue that the Report interprets the restraint of claim 115 as being triangular in shape but improperly does not require the same to have a constant cross section which extends along the length of the "vertical strip extension means." Defendants claim that such structure is shown in each of the embodiments described and shown in the specification. We find that the Magistrate Judge has properly construed the restraint of claim 115.

Defendants next claim that the Report improperly interprets claims 115 and 144 without requiring each of the "base strip extension means," the "connecting strip means" and the "reinforcing means" to be in the form of a strip which is oriented in a respective plane that intersects with the plane of the "vertical strip restraining means." However, we find that the Magistrate Judge has properly interpreted claims 115 and 144. Therefore, defendants' objection is overruled.

[13] Defendants next argue that the Report does not address the fact that the function of the "anchoring

means" is missing from claim 144. Moreover, defendants claim that the Magistrate Judge has made no attempt to interpret the function of this means element. We reject this objection because we find that the function of the "anchoring means" is self-explanatory-i.e., to "anchor" or fasten, moor and secure. Therefore, defendants' objections are overruled.

[14] Finally, defendants argue that the Report improperly interprets the word "substantial" in claim 144. Defendants claim that there is nothing in the patent specification which would assist one in determining the meaning of this word. However, when evaluating a claim for particularity and distinctness, its terms must be understandable to one skilled in the art. *Markman*, 52 F.3d at 986; *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 927 F.2d 1200 (Fed.Cir.1991). We agree with the Magistrate Judge that the term "substantial," when considered in light of the entire claimed invention, is as accurate as the subject matter permits and provides sufficient guidance to one skilled in the art of paving stone installations. Therefore, defendants' objection is denied.

B. Errors of Omission

Defendants also object because they claim that the Magistrate Judge did not rule on all of the issues presented. Defendants claim that the Magistrate Judge failed to:

1. Determine whether the "hard surface means" is an integral part of the subject matter of claim 115;
2. Interpret the specific function of the "reinforcing means for said connecting strip means" of claim 115;
3. Construe the various limitations recited in the last three paragraphs of claim 115;
4. Construe the word "strip" which appears numerous times in claim 115;
5. Interpret the orientation of the various strips of claim 115 even though these elements have a particular orientation as shown in the patent;
6. Define the "level base surface" and "below local ground level" recitations in claim 144; and
7. Provide an interpretation for the function of the "base strip extension means" in claim 115.

[15] We find defendants' objections to be without merit. With regard to the alleged failure to interpret the function of the "reinforcing means for said connecting strip means" of claim 115, the Magistrate Judge's amended report specifically stated that this means element functions "as a reinforcement for the support." We find that the Magistrate Judge properly interpreted the function of the reinforcing means.

Moreover, the limitations in the last three paragraphs of claim 115 have not been ignored. The recitations are to be given their ordinary and intended meaning. We find that the Magistrate Judge did just that. As to some of the remaining alleged omissions, we find that these issues are not in dispute because they were never raised by defendants.

In sum, we find that the Magistrate Judge properly considered and ruled on all issues presented by the parties. Moreover, we agree with the conclusions of the Magistrate Judge.

C. Error in the Characterization of the Report

[16] Defendants object to any denomination of the Report as a final disposition of the claim interpretation issues. Defendants argue that, pursuant to *Markman*, the obligation of the court is simply to instruct the jury as to the meaning of the claim language. Defendants argue that there is no mandate that the court construe

the claim language as a matter of law prior to trial. Moreover, defendants claim that the Report is not specifically dispositive of any claim or defense.

However, we must remember that it was defendants who moved for a claim interpretation prior to trial. The defendants argued for the pre-trial construction in view of the Federal Circuit's suggestion in *Markman* that the claim construction can be pronounced either in a charge to the jury or in the context of dispositive motions such as those seeking judgment as a matter of law. Accordingly, defendants requested in their motion that "the claims may then be construed by the court as a matter of law and the parties may be advised of such construction prior to presenting their evidence to the jury."

As a result of the defendants' motion that the claim construction be treated dispositively in advance of trial, both parties filed motions for judgment as a matter of law on this issue. The Magistrate Judge then dispositively decided the claim construction pursuant to *Markman*. Thus, the Magistrate Judge followed the *Markman* decision by pronouncing the meaning of language in the claims as a matter of law in the context of the dispositive motions which were filed. This was done at the insistence of the defendants. Therefore, defendants' argument on this issue is rejected.

D. Errors in the Statement of Facts

[17] Defendants object to the statement of facts set forth in the Report. Defendants claim that the various proceedings and briefs involving claim construction were not for the purpose of determining facts, but to determine matters of law. Defendants object to the inclusion of the "relevant facts" section of the Report and object to the potential for any of the stated facts to be considered as findings of fact. In particular, defendants object to the statements relating to the contacts between Jones and Strobl in early 1990.

Defendants argue that they had no opportunity to challenge gratuitous statements of fact made in the briefs. However, this is not true. Not only did defendants have an opportunity to challenge the statement of material facts set forth in plaintiffs' dispositive motion, but they were required to pursuant to local rule 12(N). Therefore, we adopt the factual findings made by the Magistrate Judge.

CONCLUSION

After a careful consideration of the parties briefs, the relevant pleadings, the Magistrate Judge's Report and Recommendation, the defendants' and plaintiffs' objections thereto, and the memoranda opposing the objections, this court hereby adopts in full the Magistrate Judge's Report and Recommendation regarding construction of the claims at issue.

Accordingly, this court orders that the Report and Recommendation of Magistrate Judge Martin Ashman dated July 2, 1996, as amended by the Report on August 7, 1996 is adopted in full by this court. The objections of plaintiffs, Pave Tech, Inc. and Stephen Jones, and the objections of defendants, Snap Edge Corporation, Fred Strobl, Albert Litwin, Jack Glatt and Bradley LeGare, to the Magistrate Judge's Report and Recommendation are overruled. It is so ordered.

REPORT AND RECOMMENDATION

ASHMAN, United States Magistrate Judge.

Plaintiffs, Pave Tech, Inc. and Stephen Jones (hereinafter collectively referred to as "Pave Tech"), seek judgment as a matter of law concerning the interpretation of certain patent claims which it contends have been infringed. In an Amended Complaint filed April 26, 1991, Pave Tech seeks injunctive and monetary relief resulting from Defendants', Snap Edge Corporation, Fred Strobl, Albert L. Litwin, Jack Glatt and Bradley LeGare (hereinafter collectively referred to as "Snap Edge"), alleged infringement of United States

Reissue Patent No. 33,550 entitled, "Restraint Edge for Paving Members" (" '550 Reissue Patent"). FN1 Pave Tech alleges that Snap Edge has infringed, induced others to infringe or contributed to the infringement of others in violation of 35 U.S.C. s.s. 271 and 281. FN2 Snap Edge contends that the '550 Reissue Patent is invalid and, in the alternative, that their product and actions do not infringe. Since a jury has been requested in this case, the sole issue in this motion is the construction of certain claims in the '550 Reissue Patent: Independent claim 115, with corresponding dependent claims 116, 117, 128, 130 and 139, and independent claim 144, with corresponding dependent claims 145, 146, 147, 150, 157, 158, 159, 164, 165 and 167.

FN1. The '550 Reissue Patent was granted to Jones on March 12, 1991 as a reissue of U.S. Patent 4,863,307 issued September 5, 1989.

FN2. 35 U.S.C. s. 271 directs in pertinent part:

(a) Except as otherwise provided in this title, whoever without authority makes, uses or sells any patented invention, within the United States during the term of the patent therefor, infringes the patent.

(b) Whoever actively induces infringement of a patent shall be liable as an infringer.

(c) Whoever sells a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.

* * * * *

35 U.S.C. s. 281 provides:

A patentee shall have remedy by civil action for infringement of his patent.

On August 2, 1995, this Court held a hearing to determine the proper construction of claims in this case pursuant to the holding in *Markman, et al. v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed.Cir.1995), *aff'd by* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) ("in a case tried to a jury, the court has the power and the obligation to construe as a matter of law the meaning of language used in the patent claim."). In briefs and at the hearing, the parties presented their interpretations of the claims based on their reading and analysis of the claim specifications, the prosecution history and extrinsic evidence. However, on September 29, 1995, this Court stayed its decision on this issue in light of the U.S. Supreme Court grant of certiorari in *Markman*. On April 23, 1996, the Supreme Court affirmed the decision in *Markman*, expressly holding that the construction of a patent's claims, including terms of art contained therein, is exclusively within the province of the court. *Markman, et al. v. Westview Instruments, Inc., et al.*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). Based on this holding, the Court now enters the following Report and Recommendation regarding construction of certain claims at issue in this infringement suit.

I. Relevant Facts

Pave Tech, Inc. ("Pave Tech") is a Minnesota corporation with principal place of business in Bloomington, Minnesota. Stephen Jones ("Jones") is President of Pave Tech and is the owner of the '550 Reissue Patent. Pave Tech is a licensee under the '550 Reissue Patent. Snap Edge Corporation ("Snap Edge") is an Illinois corporation with principal place of business in Chicago. Fred Strobl ("Strobl") is a director and President of Snap Edge; Jack Glatt ("Glatt") is a director and Secretary/Treasurer of Snap Edge; and Bradley LeGare ("LeGare") is a director and Vice President of Snap Edge.

In 1989, Jones obtained Patent '307 for a plastic edge restraint for paving stones. During the patent application and examination process, Jones produced and sold his edge restraint throughout the United States and Canada. In December, 1989, Snap Edge was incorporated and began manufacturing plastic edge

restraints. In January, 1990, Strobl met with Jones to obtain a license under Patent '307, but Jones did not grant any license to Snap Edge. Subsequently, Jones discovered Snap Edge promoting a plastic edge restraint at an industry trade show and Jones filed the instant infringement action.

In April, 1990, Jones sought reissue of Patent '307 pursuant to 35 U.S.C. s. 251. FN3 Following the examination process, the PTO reissued the patent with several new claims as '550 Reissue Patent in March 1991. In its subsequently filed Amended Complaint, Pave Tech alleges infringement of '550 Reissue Patent.

FN3. Under Section 251, the Patent Commissioner may reissue a patent to correct any inadvertent errors if, within two years of the grant of the original patent, the patentee files an application to enlarge the scope of the patent's claims.

The '550 Reissue Patent contains 119 claims and 3 drawing sheets and provides for an edge restraint "for maintaining hard surfaces such as paving stones within a predetermined boundary." ('550 Reissue Patent, Col. 1, Ins. 17-19). The Background section of the '550 Reissue Patent chronicles the history of existing patented edge restraints and the attendant problems with each: From masonry or concrete restraints which are costly and inflexible, to steel panel restraints which are inflexible and subject to corrosion, to aluminum panel restraints which are either weak and flexible or heavy and inflexible. ('550 Reissue Patent, Col. 1, Ins. 35-70; Col. 2, Ins. 1-35). The '550 Reissue Patent also notes that "none of these [patented restraints] address converting the horizontal force applied from the paving stones into a vertical force down into the ground." (Reissue Patent, Col. 2, Ins. 43-45). Finally, the '550 Reissue Patent identifies a need for "a lightweight edge material which uses the ground around it to provide increased strength for preventing horizontal shifting of paving stones" ('550 Reissue Patent, Col. 3, Ins. 30-33) and suggests that this invention satisfies that need.

II. Discussion

A. Standard of Law-Claim Construction

[18] [19] A patent is a government grant of rights and its claims provide the metes and bounds of those rights which allow the patentee to exclude others from making, using, or selling the invention as claimed. 35 U.S.C. s. 154; *see also* *Corning Glass Works v. Sumitomo Elec. USA, Inc.*, 868 F.2d 1251 (Fed.Cir.1989). There are two types of claims in a patent: Independent claims and dependent claims. An independent claim stands on its own and does not refer to any other claim in the patent; thus, it must be read separately from the other claims when determining its scope. A dependent claim includes a reference to at least one other claim in the patent and must be interpreted to encompass each element of as well as any additional elements. However, the additional limitations of a dependent claim must not be read or implied into an independent claim if said independent claim does not contain the same limitation. *See D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570 (Fed.Cir.1985). In other words, "the dependent claim tail cannot wag the independent claim dog." *North Am. Vaccine, Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 1577 (Fed.Cir.1993).

To establish infringement, a plaintiff must prove that every limitation in a given patent claim is found in the accused product exactly or by its substantial equivalent. *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1535 (Fed.Cir.1991). Thus, an infringement analysis entails two steps. First, the meaning and scope of the claims in issue must be determined by a study of all relevant patent documents and evidence. Second, these claims must be read on (or compared) to the device accused of infringing. *Markman*, 52 F.3d at 976; *Autogiro Co. of Am. v. U.S.*, 181 Ct.Cl. 55, 384 F.2d 391, 401 (1967). In light of the recent Supreme Court affirmance of *Markman*, the first step is unquestionably an issue of law for the court to decide, while the second step is a question of fact. *Markman*, 517 U.S. at ----, 116 S.Ct. at 1393. In this Report and Recommendation, this court confines itself solely to the issue of law regarding construction of certain claims at issue, and will not address issues of patent validity or infringement.

In construing a claim, the court essentially defines the federal legal rights created by the patent document, and must neither narrow nor broaden the scope of a claim to give the patentee something different than what he has set forth. *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433 (Fed.Cir.), *cert. denied*, 488 U.S. 986, 109 S.Ct. 542, 102 L.Ed.2d 572 (1988). Claim interpretation requires consideration of the claims, the specification, and the prosecution history as well as testimony from experts or those skilled in the art as to their interpretations. *Unique Concepts, Inc. v. Brown*, 939 F.2d 1558, 1561 (Fed.Cir.1991).

A patent's specification (the written description, the drawings, and other claims in the patent) must describe the invention in such a way as to enable one of ordinary skill in the art to make and use the invention. *Markman*, 52 F.3d at 979. The specification must conclude with "one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. s. 112. Claims are, therefore, part of the specification and must be read and interpreted as such. Ultimately, however, the claim measures the invention and the fundamental difference between a specification and a claim is that "claims are infringed, not specifications." *SRI Intern. v. Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1121 (Fed.Cir.1985). Consequently, not everything in a specification must be read into a claim, and the court cannot read into a claim a limitation that appears in the specification, but not in the claim. *Minnesota Mining & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 1566 (Fed.Cir.1992); *SRI Intern.*, 775 F.2d at 1121. In other words, simply because "claims are interpreted in light of the specification does not mean that everything expressed in the specification must be read into all the claims." *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 957 (Fed.Cir.1983). In addition, references to a preferred embodiment, such as those in the specifications or drawings, FN4 are not claim limitations. *Laitram Corp. v. Cambridge Wire Cloth Co.*, 863 F.2d 855, 865 (Fed.Cir.1988), *cert. denied*, 490 U.S. 1068, 109 S.Ct. 2069, 104 L.Ed.2d 634 (1989).

FN4. Under 35 U.S.C. s. 113, a patent may contain drawings, and where those representations can help explain the words of a claim, they "may be used in the same manner and with the same limitations as the specifications." *Autogiro*, 384 F.2d at 398.

Most importantly for claim interpretation purposes, the description in the specification can act as a dictionary explaining the invention and defining terms critical to the claims. *Markman*, 52 F.3d at 979. For this reason, the specification has generally been considered "the primary basis for construing the claims" of a patent. *Standard Oil Co. v. American Cyanamid Co.*, 774 F.2d 448, 452 (Fed.Cir.1985). While the words of a claim generally mean what one skilled in the art would ordinarily expect them to mean; sometimes a claim's words may not have the ordinary meaning since a "patentee is free to be his own lexicographer." *Markman*, 52 F.3d at 980, citing *Autogiro*, 384 F.2d at 397. However, any special definitions must be set forth in the specification, and words of the claim should be given their ordinary and accustomed meaning, unless it appears that the inventor used them differently. *ZMI Corp. v. Cardiac Resuscitator Corp.*, 844 F.2d 1576, 1579 (Fed.Cir.1988).

Another source relevant to claim construction is the prosecution history as detailed in the file wrapper. The prosecution history contains the entire record of proceedings in the Patent and Trademark Office ("PTO") including express representations made by or on behalf of the applicant to induce the granting of the patent. Often among those representations are amendments and arguments made to convince the patent officer that the claimed invention complies with the statutory requirements of novelty, utility and nonobviousness. The prosecution history, therefore, can provide a record of the applicant's disclaimed or disavowed interpretations which can be excluded by the court in any subsequent claim interpretation. *See Standard Oil Co.*, 774 F.2d at 452. However, just as with the specification, the prosecution history should be used to understand the meaning of the claim language, but cannot alter the limitations contained in the claims. *Markman*, 52 F.3d at 980.

Extrinsic evidence provides a final source of information helpful for claim interpretation. Extrinsic evidence encompasses all material external to the patent and prosecution history, including expert testimony. Such evidence cannot vary or contradict the terms of the claims but can help to explain scientific principles, the meanings of technical terms and terms of art which may appear in the patent or prosecution history. In other words, while expert testimony can provide evidence as to the meaning of claim language from which the Court can then determine claim construction, experts cannot provide testimony as to the actual construction of the claim itself. *See* Markman, 52 F.3d at 980, 981.

B. Claims at Issue

In this case, the '550 Reissue Patent claims in issue include independent Claim 115 with dependent Claims 116, 117, 128, 130, 139 and independent Claim 144 with dependent Claims 145, 146, 147, 150, 157, 158, 159, 164, 165 and 167.

Claim 115 is an independent claim in '550 Reissue Patent which provides:

Support apparatus for restraining a hard surface means in a given position comprising:

substantially vertical strip restraining means for defining a boundary around said hard surface means, said vertical strip restraining means having an upper region, a lower region, an inner surface facing toward said hard surface means for receiving substantially horizontal forces from said hard surface means, and an outer surface facing away from said hard surface means;

base strip extension means extending out from said outer surface of said vertical strip restraining means in said lower region for receiving vertical forces relative to the ground surface; and

force converting means for converting said horizontal forces received by said vertical strip restraining means into vertical forces against said base strip extension means thereby restraining said hard surface means in said boundary, said force converting means including connecting strip means for connecting said vertical strip restraining means to said base strip extension means, said force converting means further including reinforcing means for said connecting strip means;

wherein said connecting means, a portion of said vertical strip restraining means and a portion of said base extension means form a triangular cross section, said connecting means forming a longest side of said triangular cross section;

wherein said vertical strip restraining means and said base strip extension means are connected to one another at said lower region of the vertical strip restraining means; and

wherein said connecting means, a portion of said vertical strip restraining means and a portion of said base extension means form a triangular cross section, said connecting strip means and said base strip extension means each including an aperture therethrough for receiving a stake, said apertures of said connecting strip means and said base strip extension means being aligned around a common axis parallel to said vertical strip restraining means.

('550 Reissue Patent, Col. 23, Ins. 22-62).

Claim 144 is also an independent claim in '550 Reissue Patent which provides:

A paving installation, comprising: (i) paving surface means for accommodating traffic which is use experiences substantial horizontal forces at its lateral edge and which is located on top of a substantially level base surface, and (ii) edge restraint means for receiving said horizontal forces and maintaining the

paving surface means in position, said edge restraint means being at least partially disposed below local ground level and including:

(a) an upright member engaged with lateral edges of the paving surface means and having sufficient flexibility to accommodate irregular shaped boundaries along said lateral edges with said upright member exhibiting a first surface abuttingly engaging the lateral edges of the paving surface means, a second surface opposed to the first surface, and a top surface;

(b) an extension member disposed laterally of the upright member and including a bottom surface portion located on the base surface; and

(c) force converting means operatively arranged between the upright member and the extension member for transferring the substantial horizontal forces imparted to the first surface of the upright member via the paving surface to the base surface, said edge restraint means including anchoring means engaged into the base surface.

('550 Reissue Patent, Col. 25, lns. 47-70; Col. 26, lns. 1-3).

C. "Means Plus Function" Analysis

[20] Snap Edge contends that essential elements of these claims must be evaluated under a "means plus function" analysis pursuant to 35 U.S.C. s. 112(6) ("s. 112(6)"). FN5 Section 112(6) permits an element of a claim for a combination to be expressed as a means for performing a function without recital of structure in support thereof. *Valmont Industries, Inc. v. Reinke Mfg. Co., Inc.*, 983 F.2d 1039, 1042 (Fed.Cir.1993). But, in order to avoid a completely open-ended interpretation, a claim limitation using means plus function language is construed to include only the structure, material, or acts (and their equivalents) that are described in the patent's specification as the means for performing the claimed function. Herbert F. Schwartz, *Patent Law and Practice* 80 (2d ed. 1995). "Therefore, if one employs means-plus-function language in a claim, one must set forth, in the specification an adequate disclosure showing what is meant by that language." *In re Donaldson Co., Inc.*, 16 F.3d 1189, 1195 (Fed.Cir.1994). In effect, Section 112(6) operates like a reverse doctrine of equivalents because it restricts the coverage of literal claim language. *Valmont*, 983 F.2d at 1042.

FN5. Section 112(6) directs:

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.

Pave Tech initially agreed that means plus function analysis applied to these claims; however, it has since changed its position. (Transcript at 16-19). Currently, Pave Tech contends that the term 'means' as used in most of the claims is superfluous and that means plus function analysis is improper since many elements are "structural claims with attendant functional language added." (Report of David Melton ("Melton Report"), at 6-7).

The Court is not persuaded by Pave Tech's newly minted position and finds, from a plain reading of the '550 Reissue Patent, that essential elements of Claims 115 and 144 are set out with means plus function language and must be evaluated as such. FN6 Once means plus function terms are discovered in a patent's claims, the Court must identify the structure in the specification. Means plus function claims must be interpreted in light of the entire invention as a whole. Once that structure is identified, the issue of infringement depends

on whether the single means in the accused device which performs the function stated in the claim is the same as or an equivalent of the corresponding structure described in the patentee's specification as performing that function. *D.M.I., Inc. v. Deere & Co.*, 755 F.2d at 1575.

FN6. The Court notes that this finding mirrors that of Magistrate Judge Gottschall in her March 30, 1994 Report and Recommendation denying summary judgment which was adopted by Judge Wayne Andersen. Snap Edge argues that this is the "law of the case;" however, the Court rejects this argument. The issue of the applicability of Section 112(6) to the '550 Reissue Patent is not one which has been decided by an appellate tribunal, and can therefore not be considered the law of the case. *See Avitia v. Metropolitan Club of Chicago, Inc.*, 49 F.3d 1219, 1227 (7th Cir.1995) (Holding that a judge may reexamine his earlier ruling (or that of a judge previously assigned to the case) if he has a strong and reasonable conviction that the earlier ruling was wrong and if it would cause no undue harm to the party that had benefitted from it.)

[21] For those elements of the claims which are not means plus function terms, Section 112(6) necessarily does not apply and the claim is to be construed by giving each word its common, ordinary meaning unless otherwise noted in the specification. *McGill, Inc. v. John Zink Co.*, 736 F.2d 666, 674 (Fed.Cir.1984), *cert. denied*, 469 U.S. 1037, 105 S.Ct. 514, 83 L.Ed.2d 404. As Pave Tech points out, means plus function analysis only applies where no structure has been identified in the claim; therefore, where the claim uses the word means but structure is recited, Section 112(6) necessarily does not apply. *See Laitram Corp v. Rexnord, Inc.*, 939 F.2d at 1536. In other words, where a claim recites structure which only specifies what a means *does* and not what a means *is*, that element falls under Section 112(6). The Court finds that both Claim 115 and Claim 144 contain means plus function elements and non-means plus function elements which will be construed appropriately.

D. Claim Construction

Claim 115 provides for the combination of various integral elements to create a "support apparatus for restraining a hard surface means in a given position." The resulting product is intended for use in the paving industry. Claim 144 sets forth a process for creating a "paving installation." It is also a combination claim comprised of various elements, including the apparatus detailed in Claim 115, each of which is considered essential and equal to the others. There being no specific disputes over the construction of the dependent claims at issue, the Court will confine its analysis to the independent claims.

1. Independent Claim 115

The essential elements of Claim 115 are:

a. Vertical strip restraining means

Claim 115 requires a means to define a boundary around the paving stones and to receive "substantially horizontal forces" from those stones. Pave Tech suggests that means plus function analysis is not necessary because the claim specifies a structure: An upper region, a lower region, an inner surface and an outer surface. However, the Court does not agree because the description provided in the claim is so vague as to essentially encompass any structure with four sides. The recited structure, as it stands, merely describes what the strip does, not what it is structurally.

[22] This element, therefore, appears ripe for means plus function interpretation. Examining the specification reveals a more detailed description of the vertical strip. The Court finds that the vertical restraining strip refers to an upright member as described in the specification or a structural equivalent thereof. (As depicted in Figs. 1 and 2, # 20). As delineated in the specifications, the vertical strip is substantially vertical with a height dependent upon the size of the paving stones and the magnitude of the forces to which the restraint will be subjected. ('550 Reissue Patent, Col. 5, Ins. 44-54). The vertical strip is to be thicker than either the

base strip, the connecting strip or the cross strip, but be shorter than the base strip, for optimum force conversion. ('550 Reissue Patent, Col. 6, lns. 1-10, 65-70).

b. *Base strip extension means*

[23] Another integral element of Claim 115 is a means for "receiving vertical forces" which extends from the outer surface of the vertical restraining means element discussed above. Once again, Pave Tech contends that this element is not subject to means plus function interpretation; and, once again, the Court disagrees. Simply reciting that the base strip extension extends from the vertical strip in the lower region hardly provides the type of definite structure required. The Court finds that this refers to a horizontal member or a structural equivalent thereof. (As depicted in Figs. 1 and 2, # 28). The specifications detail a base strip extending perpendicular from the vertical strip, which is thinner than the vertical strip, and longer than the vertical strip is high for optimum force conversion and flexibility. ('550 Reissue Patent, Col. 5, lns. 55-70; Col 6, lns. 5-10, 65-70).

c. *Force converting means*

[24] This element is comprised of the "connecting strip means" and a "reinforcing means." Each of these elements tell what they do rather than what they are and are thus subject to Section 112(6) interpretation. The connecting strip means, as described in the claim, connects the vertical strip restraint and the base strip extension to form a triangular cross section, for which the connecting strip is the longest side. The restraining means is also a means plus function element. The specification details a reinforcement element called a cross-strip which is described on the specification as extending from the juncture of the vertical strip and the base strip to the connecting strip (as depicted at Figs. 1-3 as # 42).

The Court finds that the '550 Reissue Patent specification sufficiently describes and details the invention claimed in Claim 115. In sum, Claim 115 describes an edge restraint for maintaining paving stones within a fixed, though sometimes uneven, border. The restraint is triangular in shape and includes an upright component ("vertical strip restraining means"), a base component ("base strip extension means"), and a component called a "force converting means" which includes a "connecting strip" and a "reinforcing means." The longest side of the triangle is formed by the connecting component, the next longest side is formed by the base component and the shortest length is formed by the upright component. The "force converting means" serves as a brace against the horizontal forces of the paving stones and is located within the triangle formed by the upright, base and connecting components. Furthermore, the connecting component, cross strip component and base component contain a hole through which a stake may be driven parallel to the upright component for added stability.

2. *Independent Claim 144*

The essential elements of Claim 144 are:

a. *Paving surface means*

One integral part of Claim 144 is the paving surface means. There is no dispute that this element only explains what it does rather than what it is and is clearly a means plus function element. The specifications establish that the paving surface means are interlocking paving stones intended to support pedestrian to heavy truck traffic which are located atop a level base surface. ('550 Reissue Patent, Col. 1, lns. 20-24; Col. 5, lns. 50-51).

b. *Edge restraint means*

The second element of Claim 144 refers to the support apparatus described in Claim 115 and includes an upright member, an extension member, a force converting means and an anchoring means.

i. Upright member

The upright member serves the same purpose as the "vertical restraint means" detailed in Claim 115. It engages the lateral edge of the paving stones and forms a boundary for the paving surface.

ii. Extension member

The extension member corresponds to the "base strip extension means" identified in Claim 115. It connects to the base of the upright member and extends away from the paving stones and sits on the base surface.

iii. Force converting means

There is no dispute that the force converting means is the exact same component as referred in Claim 115 and includes a connecting strip and a cross strip. It is axiomatic that claim terms must be interpreted consistently throughout a patent. *Southwall Technologies, Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1579 (Fed.Cir.1995). Thus, the interpretation made in Claim 115 serves as the interpretation for this element.

iv. Anchoring means

Included in the edge restraint means is an anchoring means engaged in the base surface. As detailed in the specifications these anchoring means are stakes which can be driven parallel to the upright member, through apertures in the connecting strip, cross strip and base strip. This element is intended to add further support and to help convert forces. ('550 Reissue Patent, Col. 7, lns. 10-30).

E. Specific Disputes

Snap Edge makes three specific arguments regarding certain elements of Claims 115 and 144. First, Snap Edge argues that the force conversion referenced throughout the patent should be interpreted to require conversion of most, if not all, horizontal forces into vertical forces. Second, Snap Edge asserts that the term "substantial" as used in Claim 144 is indefinite. Finally, Snap Edge contends that term strip as used in Claim 115 and Claim 144 must be interpreted to mean continuous.

[25] Force conversion is a ubiquitous concept in the '550 Reissue patent from the Abstract through the specifications through numerous claims. Essentially, Claim 115 purports to detail a means for converting the horizontal forces, which act upon the paving stones and can cause shifting, into vertical forces in order to use the ground to keep the pavers in place. This, purported force conversion is accomplished using a connecting strip and a restraining means. Snap Edge argues that this term must be interpreted to require that most if not all horizontal forces received by the vertical restraint strip be converted into vertical forces. The Court does not agree. Nowhere in the specification is a set amount of horizontal force required to be converted into vertical force. The Court finds that there is no mandate that all horizontal force, or even most of it, be transferred via the force converting means into vertical forces. Whether any conversion actually occurs in these elements, and more importantly, whether any conversion occurs in the Snap Edge product, is a question of fact not properly before the Court at this time.

Snap Edge's second argument concerns the term "substantial" as used in Claim 144 to describe the "horizontal forces" experienced at the lateral edges of the "paving surface means." According to Claim 144, these forces are initially received by the "edge restraint means" and subsequently transferred by the "force converting means" and the "anchoring means" to the base surface. FN7 It is undisputed that the term "substantial" is only used in Claim 144 and its dependent Claim 155.

FN7. Claim 144 provides in relevant part:

A paving installation, comprising: (i) paving surface means for accommodating traffic which is [sic] use

experiences substantial horizontal forces at its lateral edges and which is located on top of a substantially level base surface, and (ii) edge restraint means for receiving said horizontal forces and maintaining the paving means in position, said edge restraint means being at least partially disposed below ground level and including:

* * * * *

(c) force converting means operatively arranged between the upright member and the extension member for transferring the substantial horizontal forces imparted to the first surface of the upright member via the paving surface means to the base surface, said edge restraint means including anchoring means engaged into the base surface.

('550 Reissue Patent, Col. 25, ln. 47; Col. 26, ln. 3).

Snap Edge suggests that, because "substantial" is nowhere defined in the '550 Reissue Patent or the file wrapper and because its meaning is so indefinite and ambiguous, Claim 144 is invalid pursuant to 35 U.S.C. s. 112(2). FN8 Pave Tech counters that "substantial" as used in Claim 144 would sufficiently inform one skilled in the art of paving installations about the claim.

FN8. In light of *Markman*, Snap Edge urges this Court to revisit its motion for summary judgment on the issue of invalidity which was denied by Judge Wayne Andersen (adopting the Report and Recommendation of Magistrate Judge Joan B. Gottschall) in 1994. The Court finds that it has neither the authority nor the inclination to do so since such a "revisitation" would amount to a "reconsideration" of circumstances not properly before this court. The Court will therefore confine its analysis to claim interpretation as directed under *Markman*.

Section 112(2) requires that:

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.

The Federal Circuit has consistently held that when evaluating a claim for particularity and distinctness, its terms must be understandable to one skilled in the art. *Markman*, 52 F.3d at 986; *see also* *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 927 F.2d 1200 (Fed.Cir.1991). In *Amgen*, the Federal Circuit held that the term "about" as used in the phrase "at least about 160,000" was indefinite and rendered the claims invalid. *Amgen*, 927 F.2d at 1217. However, the *Amgen* court was quick to caution that its holding applied only to the facts of that case and that the term "about" "may be acceptable in appropriate fact situations." *Amgen*, 927 F.2d at 1217.

Snap Edge urges the same result here, arguing that the term "substantial" renders the meaning of Claim 144 in doubt. In support of its position, Snap Edge argues that Pave Tech's own technical expert, Dr. Matthew W. Witczak ("Dr. Witczak") has provided inconsistent opinions in his 1993 deposition and recent affidavit as to the meaning of the term "substantial." Further, Snap Edge suggests that Pave Tech's reliance for this motion on the very general dictionary definition of "substantial" improperly negates the meaning of the word it modifies: "Forces." FN9 Ultimately, Snap Edge suggests that "substantial" cannot be sufficiently defined and that, therefore, Claim 144 must be invalid.

FN9. In support of this motion, Pave Tech has provided the following definition as extrinsic evidence for claim construction purposes: substantial (adjective) is defined as "consisting of, relating to, sharing the nature of, or constituting substance; not seeming or imaginary; not illusive." (Exh. 5, p. 7) citing Webster's

The Court disagrees with Snap Edge's conclusions and finds that the term "substantial" as used in the context of paving installations described in the '550 Reissue Patent is sufficiently precise to inform one skilled in the art. Dr. Witczak, as one with "extraordinary" FN10 skill in the art of pavements, has testified that in the context of paving installations like those described in the '550 Reissue Patent which can be subjected to a wide variety of loads, it is understood that no explicit quantification can be made for such forces. Thus, the term "substantial" cannot be interpreted to mean a specific quantity; rather it describes a range of loads from pedestrian to vehicular to occasional heavy truck. (Witczak Dep. at 135-146; Witczak Aff., para. 32-34).FN11 Dr. Witczak further testified that while tractor-trailers and commercial aircraft would certainly produce "substantial" forces, it is understood from the patent that this invention would not be applied in installation subject to such forces. (Witczak Aff., para. 35).FN12 In addition, the Court finds that Pave Tech's reference to a dictionary definition of "substantial" does not violate claim interpretation rules. The definition is consistent with Dr. Witczak's interpretation and helps to explain that Claim 144 relates to a range of forces and distinguishes this invention from other restraints used strictly in landscaping as discussed in the specification.

FN10. See Witczak Dep. at 242.

FN11. 32. A properly constructed paving installation as described above is capable of withstanding substantial horizontal forces that may be generated under traffic loadings on the paving installation. A strong restraint is necessary to maintain the paving stones in their horizontal direction and is provided for in the reissue patent. (Col.10, lns.28-29).

33. The "load dynamics" operating over the paving installation determine the extent of the horizontal forces. The precise magnitude of the horizontal force that will be transmitted to the edge restraint is a complex function due to many variables, *e.g.*, vehicle gear configuration, tire loads and contact pressures, traffic speeds, mode of operation (standing, turning, accelerating, braking) as well as the cross-section of the paving installation and the distance from the edge restraint to the geometric center of the load. A properly constructed paving installation as described above, will function properly in accordance with the reissue patent specification when loaded with anything from pedestrian traffic up to heavy truck traffic which would produce substantial horizontal forces. (Col.5, lns.46-51).

34. Being one of ordinary skill in the art, I understand from reading the reissue patent-in-suit; that a paving installation, properly constructed in accordance with the reissue patent, can experience substantial horizontal forces in use without failure. Such substantial horizontal forces can be generated as described in the patent by loads up to heavy trucks travelling over the paving installation. (Col.5, lns. 46-51).

FN12. 35. One skilled in the art would understand the limits to which the paving installation described in the reissue patent would be applicable for any given installation. Clearly, for example, the paving installation using the edge restraint described in the reissue patent would not be applicable for typical heavy interstate tractor-trailer [sic] vehicles nor for heavy commercial aircraft such as a Boeing 747.

The Court finds that the term "substantial," when considered in the light of the entire claimed invention, is as accurate as the subject matter permits and provides sufficient guidance to one skilled in the art of paving stone installations. *See Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed.Cir.1986) (finding that the term "so dimensioned" to be sufficiently accurate given the various types of automobiles to which the invention applied). Given that pedestrians and vehicles come in a myriad of shapes and sizes, it would be impossible to set forth every possible specific force. Thus, the use of the term "substantial forces"

adequately explains that walkways and driveways which incorporate this interlocking paving installation can be subjected to a limited range of forces—from pedestrians up to heavy trucks.

Finally, Snap Edge maintains that "force converting means" and "base strip extension means" of Claim 115 and the "force converting means" and "extension member" of Claim 144 must be construed as including a continuous strip extending the length of the "vertical restraint means" or "upright member." Snap Edge reasons that since Claims 142 and 143 and Claims 183 and 184 refer to cut out portions of the "base strip extension means," the "extension member" and the "force converting means," and since force conversion purportedly occurs along most of the length of the edge restraint; these elements must be continuous otherwise cut outs would be unnecessary and force conversion would not be possible along most of the length of the restraint. The Court finds that Snap Edge's conclusions are based upon improper claim interpretation.

Critically, Snap Edge ignores the fact that the '550 Reissue Patent contains several embodiments of the invention, including a continuous solid version (*see* Fig. 1), a segmented version (*see* Fig. 5) and a continuous cut out version (*see* Fig. 3). In addition, Snap Edge defines independent Claim 115 and 144 by placing on them limitations from dependent claims. As stated earlier "the dependent claim tail cannot wag the independent claim dog." North Am. Vaccine, 7 F.3d at 1577. Considering the patent as a whole, including the specifications, the drawings and the other claims, this Court finds that one of the major claims is that of flexibility and the ability to define uneven paving areas. To that end, the '550 Reissue Patent provides for several different embodiments of the claimed invention some of which require a solid, continuous edge restraint, and others which require cut outs, depending on the shape of the paved surface. The Court will not confine these claims to one embodiment as suggested by Snap Edge and will not interpret the term strip to be continuous.

F. Dependent Claims Interpreted

Snap Edge has presented no additional specific disputes over the interpretation of the dependent claims at issue in this case, and, therefore, the Court adopts Pave Tech's interpretations as follows, for the sake of completeness.

1. Dependent Claim 116

The edge restraint is situated in such a way that the force converting component, including the connecting component and the reinforcement component, are at least partly, but not necessarily completely, below ground level.

2. Dependent Claim 117

The paving stones must be able to be placed on a prepared base layer or foundation, such as compacted gravel, which is below ground level.

3. Dependent Claim 128

The upright and base components of the edge restraint are joined or united together at the lower end of the upright component.

4. Dependent Claim 130

The upright and the base components of the edge restraint are a single piece of plastic.

5. Dependent Claim 139

The base of the edge restraint measures about three to four inches from the point where it is joined at the upright to its outer end and the upright measures about one to two inches in height. The dimensions can vary depending on circumstances such as the projected weight of the traffic, the magnitude of the lateral forces to which the edge restraint will be subjected, the size of the pavers, and the type of material used in the pavers.

6. Dependent Claim 145

The so-called "force converting" component of the edge restraint includes a reinforcement, *i.e.*, a brace that goes from the upright component toward the base surface on which the restraint is resting. The same component in Claim 115 is referred to as a "connecting strip."

7. Dependent Claim 146

An anchor, such as a spike or a stake, extends downward from a point between the ends of the reinforcement component and into the foundation underneath the edge restraint.

8. Dependent Claim 147

The anchor for the edge restraint includes a spike which goes through the base component of the restraint.

9. Dependent Claim 150

The upright and reinforcement components of the edge restraint are made of a single piece of plastic.

10. Dependent Claim 158

The upright, base and reinforcement components of the edge restraint are all connected, as the base component is completely united to the upright component (at the lower end of the upright), and the reinforcement component joins the upright component to the base component.

11. Dependent Claim 159

The edge restraining is triangular in shape, *i.e.*, three-sided, with the reinforcing component being the longest of the three sides.

12. Dependent Claim 164

The base of the edge restraint measures approximately three to four inches from the point where it is joined at the upright to its outer end, and the upright member measures about one to two inches in height. The dimensions can vary depending on circumstances such as the projected weight of the traffic, the magnitude of the lateral forces to which the edge restraint will be subjected, the size of the pavers, and the type of material used in the pavers.

13. Dependent Claim 165

The reinforcement component of the edge restraint extends between the outer end of the base component (opposite the upright) and the upper region of the upright component at a point approximately three-quarters of its height.

14. Dependent Claim 167

The top of the upright component of the edge restraint is at or below ground level.

Conclusion

For the aforementioned reasons, the Court finds the various elements of Claim 115 and Claim 144 are means plus function components which the Court has interpreted accordingly, and, recommends that the claims at issue be interpreted as set forth above.

Dated: July 2, 1996.

MEMORANDUM OPINION AND ORDER AND AMENDMENT TO REPORT AND RECOMMENDATION

ASHMAN, United States Magistrate Judge.

This Court now addresses both parties' motions for reconsideration regarding the Report and Recommendation submitted to Judge Wayne R. Andersen on July 2, 1996 ("July 2 R & R") which interpreted certain claims of Reissue Patent No. 33,500 (" '550 Reissue Patent") at issue in the underlying infringement suit. Defendants, Snap Edge Corporation, Fred Strobl, Albert L. Litwin, Jack Glatt and Bradley LeGare (collectively "Defendants"), request revision and amendment of the July 2 R & R as it relates to three elements of the claims. Plaintiffs, Pave Tech, Inc. and Stephen Jones (collectively "Pave Tech"), dispute the interpretation of one element of the claims. For the following reasons, the Court denies both motions to reconsider but does make certain amendments to the claim interpretation for purposes of completeness and clarity.

Background

The relevant facts as recited in the July 2 R & R have been unchallenged and will not be restated here. (July 2 R & R at 1-5).

Discussion

I. Defendants' Motion To Reconsider

Defendants suggest three amendments or revisions to the July 2 R & R. First, they renew their argument as to the meaning of the term "force converting means." Second, Defendants reiterate their argument concerning the interpretation of the term "strip." Third, Defendants seeks a definition of the function of the "reinforcing means" element.

A. Force Converting Means

Defendants opine that the July 2 R & R does not properly construe the meaning of the "force converting means" element of Claim 115 and Claim 144. As they did in their previous arguments, Defendants contend that this element must be construed to mandate that a "sufficient amount" of horizontal forces be converted into vertical forces so that the hard surface means is restrained within a boundary "as a consequence of the converting." (Defendants' Memo at 3-4). Once again, the Court rejects Defendants' suggested interpretation. Nothing in the specification mandates that all or some undefined "sufficient" portion of the horizontal force be converted into vertical force by the "force converting means." In fact, the specification highlights that force conversion occurs as a factor of the relative height of the strips that comprise the edge restraint system and is aided by the use of stakes. The Court finds that Defendants' interpretation of this element improperly construes the invention as a whole and declines-for a second time-to adopt it.

B. Length of "Strips"

Defendants resume their contention that certain "strip" terms, *i.e.*, "base strip extension means" and

"connecting strip means," must be construed to require finite longitudinal dimension for each strip along the extent of the "vertical strip restraining means." In other words, Defendants argue that these "strip" elements must extend continuously along the length of the "vertical strip restraining means." Defendants rely on the holding in *The Laitram Corporation v. Rexnord Inc.*, 939 F.2d 1533, 1538 (Fed.Cir.1991), where the Federal Circuit held that "a means-plus-function limitation is not made open-ended by the presence of another claim specifically claiming the disclosed structure which underlies the means clause or an equivalent of that structure." However, the Court finds the facts of this case different from those in *Laitram* and declines to adopt Defendants' suggestion. Under means plus function analysis, the Court must look to the specification to determine the structure. Analysis of the specification reveals that interpreting these strips to be continuous would improperly limit the invention to one embodiment. Therefore, the Court denies Defendants' second requested amendment.

C. "Reinforcing Means" Element

Finally, Defendants maintain that the July 2 R & R fails to construe or define the function of the "reinforcing means" element of the "force converting means." Defendants express concern that there is no guidance for the jury on this element. The Court finds that a typographical error may have misled Defendants. At page 17, the fourth line from the bottom states: "The restraining means is also a means plus function element." (July 2 R & R at 17). This sentence should read: "The reinforcing means is also a means plus function element." Thus corrected, the Court finds the sentence which follows clearly construes this means element to function as a reinforcement for the support. The Court therefore finds that no further definition is necessary to guide the jury.

II. Pave Tech's Motion To Reconsider

Pave Tech's motion concentrates solely on the interpretation of the "substantially vertical strip means" element. First, Pave Tech renews its argument that this element should not be subject to the means plus function interpretation. FN1 Alternatively, Pave Tech suggests that even if means plus function analysis is proper, any definition of the structure gleaned from the specification should not include the "vertical strip restraining means" relative thickness.

FN1. As noted in the July 2 R & R, Pave Tech proceeded through most of this case conceding that these elements were means plus function elements as shown in the previous Report and Recommendations issued by Judge Joan Gottschall. (July 2 R & R at 13-14).

Pave Tech contends that Claim 115 contains sufficient structure to define this element which obviates the need for means plus function analysis. Specifically, Pave Tech argues that the strip is the means and that a common definition of the word "strip" plus the stated description of the element having upper, lower regions and inside and outside surfaces defines the function and structure of this element. However, this Court must interpret the claims of a patent as they are written, not as Pave Tech wishes they were written. The complete element is the "vertical strip restraining means" and the Court must interpret each word. In this case, "means" is a very significant term of art which cannot be cast off so easily. Under the *Laitram* holding, the "means" term is so important that the recitation of some structure cannot remove a claim from the ambit of Section 112(6)-means plus function analysis. *Laitram*, 939 F.2d at 1536.

The Court finds that Claim 115 does not contain sufficient structure to define this element. The recitations merely tell what it does-defines a boundary, receives horizontal forces, restrains; and where it is located-one surface facing the hard surface means and the other facing away. The Court finds that these recited attributes do not take this element outside the purview of means plus function analysis. Under 35 U.S.C. s. 112(6), interpretation of this claimed means element must be construed so as to "cover the corresponding structure, materials, or acts described in the specification and equivalents thereof."

Since the Court reaffirms the application of means plus function analysis to this element, Pave Tech argues that any reference to the "vertical strip restraining means" relative thickness is irrelevant to its function and should not be included in this Court's interpretation of the structure. Specifically, Pave Tech contends that the "vertical strip restraining means" is intended to function to define a boundary and receive horizontal forces and that these functions do not depend on this element being any set thickness. The Court disagrees because one other important function of this element is restraining. This Court finds that the relative thickness is an important structural guide for this function as well as the other functions attributed to the "vertical strip restraining means," and must be included in any interpretation of this element.

However, for the sake of clarity and completeness, the Court makes the following amendment to the July 2 R & R. The last sentence of subsection D.1.b. of the July 2 R & R states: "The vertical strip is to be thicker than either the base strip, the connecting strip or the cross strip, but be shorter than the base strip, for optimum force conversion. ('550 Reissue Patent, Col. 6, lns. 1-10, 65-70)." The Court finds that this sentence should read: "The vertical strip restraining means must be shorter than the base strip extension means for optimum force conversion. ('550 Reissue Patent, Col. 6, lns. 1-10). The thickness from the inner surface to the outer surface of the vertical strip restraining means is greater than the thickness of each of the base extension strip, the connecting strip and the cross strip. ('550 Reissue Patent, Col. 6, lns. 65-68). For increased flexibility and ease of cutting, the materials used in the making of the edge restraint includes a plastic material which can be extruded, such as polyvinyl chloride ("PVC"), and aluminum. ('550 Reissue Patent, Col. 9, lns. 12-26)."

The Court makes this amendment to the July 2 R & R in order to properly reflect the structure, materials and acts, as detailed in the specification, which define the "vertical strip restraining means" element of Claim 115.

Conclusion

For the above reasons, the Court denies both parties' motions to reconsider, but amends the July 2 R & R in two places.

Dated: August 7, 1996.

Produced by Sans Paper, LLC.