United States District Court,
D. Oregon.

QSI INDUSTRIES, INC., et al,
Plaintiffs.
v.
ESU, LLC,
Defendant.

No. CV-06-691-ST

Jan. 28, 2009.

John W. Stephens, Kim T. Buckley, Michael J. Esler, Esler Stephens & Buckley, Portland, OR, for Plaintiffs.

John Wiley Horton, Pennington, Moore, Wilkinson, Bell & Dunbar, Tallahassee, FL, Thomas H. Tongue, Elizabeth C. Knight, Dunn, Carney, Allen, Higgins & Tongue, LLP, Portland, OR, for Defendant.

OPINION AND ORDER ON CLAIM CONSTRUCTION

STEWART**, United States Magistrate Judge.**

INTRODUCTION

On May 11, 2006, plaintiffs, QSIndustries, Inc. ("QSI"), Frederick E. Severson ("Severson") and Patrick A. Quinn ("Quinn") (collectively "plaintiffs"), filed this action against defendant, ESU, LLC, alleging contributory infringement and inducement of infringement by defendant of two of QSI's patents in violation of 35 U.S.C. s. 271. FN1 Severson and Quinn invented and were issued the patents and subsequently assigned their ownership rights in the patents to QSI, which is the current owner. On July 24, 2008, plaintiffs filed their First Amended Complaint (docket # 64), alleging that in late 2005 or early 2006, defendant began importing, offering for sale, and selling a product known as the "LokSound v.3.5 Decoder" and other products intended to be installed in DC-powered model train units that, when installed and used, infringe QSI's patents. Plaintiffs seek: (1) a permanent injunction prohibiting defendant's infringement; (2) damages to be trebled in view of the intentional and willful nature of the infringement; and (3) attorney fees and costs. Defendant denies that it has infringed the two patents at issue and asserts affirmative defenses and counterclaims that both patents are invalid.

FN1. In light of 35 U.S.C. s. 271(h) ("As used in this section, the term 'whoever' includes any State ... [and] shall be subject to the provisions of this title in the same manner and to the same extent as any nongovernmental entity"), the Supreme Court has held that "the Patent Remedy Act cannot be sustained under s. 5 of the Fourteenth Amendment." Florida Prepaid Postsecondary Educ. Expense Bd. v. College Sav.

Bank, 527 U.S. 627, 647, 119 S.Ct. 2199, 144 L.Ed.2d 575 (1999). Since no party to this case is a state, this court assumes that 35 U.S.C. s. 271 remains the appropriate statute for QSI's patent infringement claims.

This court has federal jurisdiction under 28 U.S.C. s.s. 1331 and 1338(a). All parties have consented to allow a Magistrate Judge to enter final orders and judgment in this action in accordance with FRCP 73 and 28 U.S.C. s. 636(c) (docket # 37).

The parties have requested construction of certain claim language in the two patents. The court held a hearing on September 11, 2008, at which testimony was taken, and the parties filed post-hearing memoranda arguing their respective interpretations of the disputed claim terms. The court found the manner in which the parties set forth their proposed constructions was frequently confusing. Moreover, some of the positions taken in the parties' post-hearing memoranda do not appear to coincide with the areas of agreement and disagreement set forth in the Joint Claim Construction Statement. In addition, the parties' positions lacked clarity, particularly where they were not well developed, changed over time, or, in some instances, were included for the first time in a reply memorandum with no opportunity for a response. As a result, this court has experienced considerable difficulty identifying what terms remain in dispute and require construction.

CLAIM CONSTRUCTION

I. ***Claim Construction Standards***

A. ***General Rules***

"[T]he construction of a patent, including terms of art within its claim, is exclusively within the province of the court." Markman v. Westview Instruments, Inc., 517 U.S. 370, 372, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). While the court adopts the parties' agreed construction of claims where possible, claims are construed independently and not simply as a choice between the parties' constructions. Exxon Chem. Patents, Inc. v. Lubrizol Corp., 64 F.3d 1553, 1555 (Fed.Cir.1995), *cert denied,* 518 U.S. 1020, 116 S.Ct. 2554, 135 L.Ed.2d 1073 (1996). Because claim construction "is not an obligatory exercise in redundancy," the court need not restate every claim. United States Surgical Corp. v. Ethicon, Inc., 103 F.3d 1554, 1568 (Fed.Cir.), *cert denied,* 522 U.S. 950, 118 S.Ct. 369, 139 L.Ed.2d 287 (1997).

"[C]laims should be so construed, if possible, as to sustain their validity." ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577 (Fed.Cir.1984) (citations omitted). The claim language specifies " 'the subject matter which the applicant regards as his invention.' " Markman, 517 U.S. at 373, quoting 35 U.S.C. s. 112.

To construe a patent claim, courts look to the language of the claims in the patent itself, the description in the patent's specification, and the prosecution history of the patent, all of which constitute a record "on which the public is entitled to rely." Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1583 (Fed.Cir.1996); *see also* Dow Chem. Co. v. Sumitomo Chem. Co. ., Ltd., 257 F.3d 1364, 1372 (Fed.Cir.2001). Claim language is given its "ordinary and accustomed meaning as understood by one of ordinary skill in the art." Dow Chem. Co., 257 F.3d at 1372 (citation omitted). Courts cannot rewrite claims, but must "give effect to the terms chosen by the patentee." K-2 Corp. v. Solomon S.A., 191 F.3d 1356, 1364 (Fed.Cir.1999) (citation omitted).

In most cases, the court should be able to resolve ambiguous claim terms by analyzing only the intrinsic evidence. Vitronics Corp., 90 F.3d at 1583. If the intrinsic evidence is inconclusive, however, the court may look to extrinsic evidence, including "expert testimony, inventor testimony, dictionaries, and technical treatises and articles." Id. at 1583-84.

B. ***Claim Language***

"The actual words of the claim are the controlling focus." Digital Biometrics, Inc. v. Identix, Inc., 149 F.3d 1335, 1344 (Fed.Cir.1998), citing Thermalloy, Inc. v. Aavid Eng'g, Inc., 121 F.3d 691, 693 (Fed.Cir.1997). There is a "heavy presumption" that a claim term carries its "ordinary and customary meaning," and any party seeking to convince a court that a term has some other meaning "must, at the very least, point to a term or terms in the claim with which to draw in [statements in the written description that affect the patent's scope]." Johnson Worldwide Assocs., Inc. v. Zebco Corp., 175 F.3d 985, 989 (Fed.Cir.1999) (internal quotations and citations omitted). This may be accomplished if: (1) "a different meaning is clearly and deliberately set forth in the intrinsic materials" of the patent; or (2) use of "the ordinary and accustomed meaning ... would deprive the claim of clarity...." K-2 Corp., 191 F.3d at 1363. In making this assessment, the court should use common sense and "the understanding of those of ordinary skill in the art" of the patent at issue, unless the patent history supplies another meaning. Id. at 1365; Digital Biometrics, 149 F.3d at 1344.

"An accused infringer may overcome this 'heavy presumption' and narrow a claim term's ordinary meaning, but he cannot do so simply by pointing to the preferred embodiment or other structures or steps disclosed in the specification or prosecution history." CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed.Cir.2002), citing Johnson Worldwide, 175 F.3d at 989-90; Burke, Inc. v. Bruno Indep. Living Aids, Inc., 183 F.3d 1334, 1340 (Fed.Cir.1999). As clarified by the Federal Circuit:

[A] court may constrict the ordinary meaning of a claim term in at least one of four ways. First, the claim term will not receive its ordinary meaning if the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history.... Second, a claim term will not carry its ordinary meaning if the intrinsic evidence shows that the patentee distinguished that term from prior art on the basis of a particular embodiment, expressly disclaimed subject matter, or described a particular embodiment as important to the invention.... Third ... a claim term also will not have its ordinary meaning if the term "chosen by the patentee so deprive[s] the claim of clarity" as to require resort to the other intrinsic evidence for a definite meaning.... Last, as a matter of statutory authority, a claim term will cover nothing more than the corresponding structure or step disclosed in the specification, as well as equivalents thereto, if the patentee phrased the claim in step- or means-plus-function format.

CCS Fitness, Inc., 288 F.3d at 1366-67 (internal citations omitted).

"[C]laims are always construed in light of the specification, of which they are a part." Netword LLC v. Centraal Corp., 242 F.3d 1347, 1352 (Fed.Cir.2001). "That claims are interpreted in light of the specification does not mean that everything expressed in the specification must be read into all the claims." *SRI Int'l,* 775 F.2d at 1121 (internal quotations and citation omitted). It is improper to import, or "read in" to a claim, a limitation from the specification's general discussion, embodiments, and examples. *See, e.g.* Enercon GmbH v. Int'l Trade Comm'n, 151 F.3d 1376, 1384 (Fed.Cir.1998), *cert denied,* 526 U.S. 1130, 119 S.Ct. 1803, 143 L.Ed.2d 1007 (1999) (noting that "[t]his court has repeatedly stated that while claims are to be construed in

light of the specification, they are not necessarily limited by the specification."); Intel Corp. v. United States Int'l Trade Comm'n, 946 F.2d 821, 836 (Fed.Cir.1991) (internal quotation and citation omitted) (emphasis in original) (holding that "[w]here a specification does not *require* a limitation, that limitation should not be read from the specification into the claims ."); Constant v. Advanced Micro-Devices, Inc., 848 F.2d 1560, 1571 (Fed.Cir.1988) (citations omitted) (finding that "[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims.").

Still, "[c]laims are not interpreted in a vacuum." Slimfold Mfg. Co. v. Kinkead Indus., Inc., 810 F.2d 1113, 1116 (Fed.Cir.1987). "[T]he specification is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term." Vitronics, 90 F.3d at 1582. Thus, it is improper to eliminate, ignore, or "read out" a claim limitation in order to extend a patent to subject matter disclosed, but not claimed. *See, e.g.,* Ethicon Endo-Surgery, Inc. v. United States Surgical Corp., 93 F.3d 1572, 1582-83 (Fed.Cir.1996).

Moreover, claims cannot "enlarge what is patented beyond what the inventor has described as the invention." Netword, LLC, 242 F.3d at 1352. For example, when the patent specification describes the invention as including a feature, the claims should be construed to require that feature. *See, e.g.,* Watts v. XL Sys., Inc., 232 F.3d 877, 883 (Fed.Cir.2000) (interpreting claims to require varying taper angles because specification stated that "the present invention utilizes [the varying taper angle] feature"). Similarly, when the specification criticizes or disclaims certain features in the prior art, the claims should not be read to encompass the criticized features. SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc., 242 F.3d 1337, 1341 (Fed.Cir.2001) (finding that the criticism of one type of "lumen" in patent excluded that type from construction of the claim term).

Finally, claims should not be limited to the preferred embodiment. CVI/Beta Ventures, Inc. v. Tura LP, 112 F.3d 1146, 1158 (Fed.Cir.1997); *see also* Amhil Enter., Ltd. v. Wawa, Inc., 81 F.3d 1554, 1559 (Fed.Cir.1996) (holding that "[a] preferred embodiment ... is just that, and the scope of a patentee's claims is not necessarily or automatically limited to the preferred embodiment"). Instead, the court may consider the prosecution history of the patent, which includes the complete records of the proceedings before the U.S. Patent and Trademark Office ("PTO"), including any re-examination proceedings, and any representations made by the applicant about the scope of the claims. *See* Vitronics, 90 F.3d at 1582-83.

It is well-settled that "where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention, the preamble is not a claim limitation." Rowe v. Dror, 112 F.3d 473, 478 (Fed.Cir.1997) (citations omitted). A preamble does not "disclaim," but may limit the scope of the claims. *See, e.g.,* STX, LLC v. Brine, Inc., 211 F.3d 588, 591 (Fed.Cir.2000). The effect of limiting statements depends on whether certain "language is essential to particularly point out the invention defined by the claims." Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 678 (Fed.Cir.1988). In other words, "[t]he preamble is not given the effect of a limitation unless it breathes life and meaning into the claim." MPEP s. 2111.02.

C. *Prosecution History*

Prosecution history of a patent with the PTO "limits the interpretation of claims so as to exclude any interpretation that may have been disclaimed or disavowed during prosecution in order to obtain claim allowance." Jonsson v. Stanley Works, 903 F.2d 812, 817 (Fed.Cir.1990) (internal quotations and citations

omitted). Any statements or actions made in the prosecution history by the patentee characterizing what the claimed invention includes or excludes provide notice to the public as to the scope of the claims and therefore are binding on the construction of the claims. *See, e.g.,* Hockerson-Halberstadt, Inc. v. Avia Group Int'l, Inc., 222 F.3d 951, 957 (Fed.Cir.2000) (allowing patentee to erase actions in the prosecution history would be "inimical to the public notice function provided by the prosecution history."); Southwall Techs., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576-77 (Fed.Cir.1995) (finding that applicant's statement made during prosecution that "sputter-deposited dielectric" could only be formed by a one-step process precluded claims from including a two-step process).

II. ***Plaintiffs' Patents***

The two patents are directed toward the digital remote control of DC-powered model train locomotives. United States Patent No. 5,448,142 ("'142 Patent"), issued September 5, 1995, is entitled "Signaling Techniques for DC Track Powered Model Railroads." United States Patent No. 5,896,017 ("'017 patent"), issued April 20, 1999, is entitled "Model Train Locomotive with Doppler Shifting of Sound Effects."

A. ***Background***

Traditionally the speed and direction of a model train has been controlled by varying the voltage and polarity on the rails. The higher the voltage, the faster the locomotive moves; the lower the voltage, the slower the locomotive moves. If the right rail is positive with respect to the left rail, the locomotive moves forward; if it is negative, the locomotive moves in reverse.

Lionel and other larger model trains operate on alternating current ("AC"), *e.g.,* power supplied from a plug-in electrical outlet. Tr. 26. FN2 Alternating current flows in one direction and then switches to another direction. Tr. 27. For example, standard household AC current flows at 60 cycles a second, meaning that every other second, the current flows in the opposite direction. Smaller model trains, however, which became popular after 1945 when houses became smaller, required smaller motors that could be powered by magnets. Id. Because the smaller motors would vibrate but not move when powered by AC, they were designed to operate on direct current ("DC"), *e.g.,* batteries/power packs, where the power flows continuously in one direction. Tr. 27, 29.

FN2. "Tr." refers to the transcript of Markman Hearing held on September 11, 2008.

B. ***The "DCC" System*** FN3

FN3. The discussion of the DCC System is helpful as a historical context for the discussion of plaintiffs' claimed inventions. The court's discussion of the DCC System does not imply the existence of any issue at this stage of the proceedings relative to the validity of the '142 Patent or the '017 Patent.

With progress in the micro-electronics industry in the late 1970s and early 1980s, a new system was developed allowing model trains to have more features, such as sound effects. This progress eventually led to development in the early 1980's of the digital command control ("DCC") system that allows the independent operation of more than one locomotive at the same time on the same track. The DCC system became the standard of the National Model Railroad Association ("NMRA") in 1994. Tr. 119; Pl.Ex. 5. The DCC signal starts as AC from a wall outlet, flows to a bridge rectifier to convert the AC to DC, then flows

to a command station that applies a polarity reversal, which in turn generates the DCC digital command to the track. Tr. 36, 124-25. A second rectifier on the locomotive then backs out the polarity reversal, returning to DC, in order to avoid possible damage to the electronics and motors on the locomotive. Tr. 36, 128. A continuous high frequency alternating waveform signal is then sent from a controller unit down the track. Id. The signal is made by stretching AC so it can be read as a binary code 1 or 0. Tr. 37-38. This coded signal controls a decoder placed in a specific locomotive which interprets the signal as a digital command and causes the locomotive to use as much of the track voltage as needed to move forward or backward, to turn its headlight on or off or dim it, or to ring a bell. Id. A second rectifier inside the motor removes the polarity reversals from the signal. Tr. 124-129.

C. '142 Patent ***Prosecution History***

According to Severson, the DCC system is "phenomenal," but the substantial majority of train enthusiasts who purchased older model trains ("legacy trains") operating on DC power had problems using the DCC system. Tr. 38. The legacy train would not move and often the engine would become overheated and damaged by trying to travel in opposite directions quickly. Tr. 37. Severson and his co-inventor, Quinn, tackled this problem by developing a package of patents to build more capability into the legacy trains using the DC track power signal to apply a series of polarity reversible pulses. Tr. 28. Those pulses are sent in brief, infrequent, and rapid bursts ranging from one-third of a second to one second, thus preventing the engine from changing direction in response. Tr. 40-41. The train also can be isolated from having the pulse reversing its direction by using a bridge rectifier or double-pull switch. As a result, a legacy train can operate normally on a DC powered system when receiving the polarity reversal pulses, but also has the other features available under the DCC system. Id.

Severson and Quinn applied for the '142 Patent on September 27, 1993. They generally described their invention as a "novel and simple way of generating and receiving remote control signals for DC powered two or three rail trains that does not require a change in the DC operating standard or require changing track power supplies." Def. Ex. 101 at 142-8. On October 28, 1994, the PTO rejected Claims 1-22 because they reflected prior art. In addition, the PTO concluded that the title of the claimed invention, "Signaling Techniques for DC and AC Powered Model Railroads," was not descriptive of the invention because AC powered units were not present. In response, Severson and Quinn requested the title to be amended to read "Signaling Techniques for DC Powered Model Railroads." The inventors also explained the prior art did not address "remote control of special effects, *e.g.,* bells, whistles, and lights, responsive to DC track power reversals, etc., *without changing the motor control state*." Def. Ex. 101 at 142-113 (emphasis in original). Severson and Quinn amended Claim 1 to "emphasize" that it "means responsive to polarity-reversals on the DC track power signal for controlling remote effects *without reversing the motor*." Id. (emphasis in original).

On February 15, 1995, the PTO issued a "Notice of Allowance" and granted the ' 142 Patent to Severson and Quinn. Id. at 142-119.

D. '017 Patent ***Prosecution History***

The '017 Patent uses the same platform as the '142 patent, but recreates the Doppler sound effects by digitally altering a recording of an actual train's whistle. Plaintiffs assert that the '017 Patent discloses three means to measure the speed of the train: (1) the microprocessor; (2) an optical tachometer which provides information to the microprocessor; and (3) back electromotor force ("BEMF"), which measures the amount of electrical energy that the motor is using as the means of determining the speed of the model train.

Severson and Quinn applied for the '017 Patent on June 7, 1995. They described the patent as generally involving "a number of novel remote control signaling methods that can be used within the existing DC powered train standard and describes a number of novel remote control effects that can be operated by these signals." Def. Ex. 102 at 017-17. On November 21, 2005, the PTO rejected Claim 1 under the "doctrine of double patenting" because the subject matter of the claim was already covered under Claims 1-22 of the ' 142 Patent. On March 19, 2006, Severson and Quinn amended the '017 Patent application, cancelling Claim 1 and substituting Claims 23-38 "to more fully describe the invention over the parent case" (the '142 Patent). They titled the invention the "Remote Control Effects in Model Railroading." Def. Ex. 102 at 017-120. Claim 23 recited the following method:

In a model railroad train arranged for operation on a model railroad track having a power signal supplied through the track, a method for remotely controlling a special effect using a plurality of DC voltage pulses supplied through the track by a train operator comprising:

sending a first DC signal through the tracks, said first DC signal having a first polarity;

sending a second DC signal through the tracks, said second signal having a second polarity;

detecting the polarity of the first and second DC signals, said polarity being indicative of a positive or negative value to form, in sequence, *a binary coded series;*

activating a special effect associated with the model railroad in response to said detected coded series.

Id. at 017-116 (Emphasis added).

On May 14, 1996, the PTO rejected Claims 23-30 and Claims 35-38 on the ground that:

no mention can be seen within the specification as to the forming of a binary coded series to control the special effects of the locomotive. The coding within the specification appears to be directed to only the whistle or horn, which when blown in two long and one short blast, can toggle the bell on or off. There does not appear to be any discussion as to the polarity reversals other than to change the state generator....

Id. at 017-133.

On October 4, 1996, Severson and Quinn resubmitted the '017 Patent application, cancelling pending Claims 23-38 and adding new Claims 39-86. Ex. 102 at 017-135-146. On October 31, 1996, the PTO issued a Notice of Action to Severson and Quinn stating that the inventions described in each of the new Claims 39-86 were distinct and had acquired separate status in the art. Accordingly, restriction of the claims to one invention was required under 35 U.S .C. s. 112. Id. at 017-151-155. That being the case, the PTO required Severson and Quinn to make an election as to which invention or inventions they wished to have examined by the PTO. Id. at 017-155. Neither Severson nor Quinn responded to the notice. Accordingly, on July 2, 1997, the PTO issued a Notice of Abandonment by Severson and Quinn of Claims 39-86 of the '017 Patent application. Id. at 017-156.

On September 18, 1997, Severson and Quinn submitted a "Response to Restriction Requirement" explaining that Claims 39-86 were unintentionally abandoned and petitioning for the cancellation of all of these Claims

except amended Claims 48-51 and 71. Id. at 017-157-161. On September 24, 1997, the PTO granted the petition and examined Claims 48-51 and 71. Id. On December 3, 1997, the PTO rejected Claim 48 as having been anticipated and Claims 49-51 and 71 as unpatentable. Id. at 017-166-170. On July 8, 1998, Severson and Quinn amended the title of the claimed invention to read "Measurement and Applications of [BEMF] in a Model Railroad." They also amended Claim 48 to incorporate Claim 49 (thereby canceling that claim), amended Claims 50 and 51 to depend on Claim 48, amended Claim 71, and added Claims 72-81. On July 13, 1998, the PTO again rejected Claims 48, 50, 51, and 71 as being unpatentable. Id. at 017-180-184.

On October 16, 1998, Severson and Quinn responded by again amending Claim 48 to clarify the invention, amended Claim 71 to match the changes made in Claim 48, canceled Claims 87-96, and added Claims 97-98. Id. at 017-185-189. Based on these amendments, on October 28, 1998, the PTO issued a Notice of Allowance of Claims 48, 50, 51, 71, 97, and 98. Id. at 017-191.

II. ***Disputed Terms***

The parties agree that claim terms used more than once or in more than one asserted claim in either the '142 Patent, '017 Patent, or both, have the same meaning and are used consistently throughout. The '142 Patent contains device (or apparatus) FN4 claims for controlling the power supply to a model railroad train locomotive. The ' 017 Patent contains method (or means) FN5 claims for controlling remote effects on the locomotive. The patents include drawings of variations (or preferred embodiments) FN6 of the claimed devices and methods.

FN4. Device (or apparatus) claims patent a device, such as an automatic bread maker.

FN5. Method (or means) claims patent a method, such as the steps for baking bread.

FN6. A preferred embodiment is a detailed description of the invention, including the best modes for carrying out the invention.

In the course of briefing the claim construction issues, the parties either reached agreement or conceded the opponent's arguments regarding the construction of certain terms. The disputed claim terms, as best as the court can ascertain from the parties' briefing, are set forth below. The underlined language reflects the remaining disputes over the construction of existing claim language. The italicized language reflects limitations defendant seeks to import into a claim.

A. ***'142 Patent Claims*** FN7

FN7. In its Reply, defendant withdrew its claim construction arguments as to Claim 2. Nevertheless, for the first time defendant offered claim constructions relating to examples of means to "index" the "electronic state generator," which are identified in Claim 2. The proposed constructions are untimely. In any event, they are inapt because they import limitations based on language found in the patent specification that are, at best, preferred embodiments.

Claim 1. A model train locomotive for use on a model railroad track that is coupled to a power supply for

controllably applying a *polarity-reversible DC track power signal to the track,* the locomotive comprising: a motor for driving the locomotive over the track;

means for isolating the motor from the track so as to allow use of polarity-reversals on the track power signal to the track for controlling remote effects; and

means responsive to polarity reversals on the DC track power signal for controlling remote effects without reversing the motor.

Claim 8. A model train locomotive according to claim 1 further comprising a motor reverse unit for driving the motor according to a selectable direction state, whereby the motor direction is controllable independently of the polarity of the DC power signal applied to the track.

A device on board the model train retains a selected direction state, and it will continue to drive the train in the selected direction state even though the polarity of the track signal is reversed one or more times.

Claim 10. In a DC powered model train locomotive having a motor, a *method of using polarity reversals of the DC track power signal as a remote control signal,* the method comprising the steps of:

receiving the DC track power signal through the wheels of the locomotive;

rectifying the DC track power signal so as to form a DC output signal having a predetermined polarity independent of the polarity of the DC track power signal;

selecting a direction state that is one of a predetermined series of direction states including forward, reverse and neutral states;

selecting a DC signal polarity for driving the motor in a motor direction corresponding to the selected direction state; and

applying the DC output signal to the motor with the selected DC signal polarity, thereby driving the motor in the motor direction corresponding to the selected direction state notwithstanding a reversal in polarity of the DC track power signal.

Claim 15. A method according to claim 10 further comprising changing the direction state in response to a polarity reversal of the DC track power signal.

All voltage to the track is removed, the polarity of the voltage is reversed in order to change the model train's direction state, and then the voltage is reapplied to the track.

B. *'017 Patent Claims*

Claim 1. A model train locomotive having a motor for use on a model railroad track that is coupled to a power supply for controllably applying a track power signal to the track, the locomotive comprising: *means for determining a present speed of the locomotive over the track;*

special effect means for generating audible sound effects; and

means for shifting pitch of the audible sound effects so as to simulate the Doppler effect *as a substantially monotonic function* of said speed of the locomotive.

Claim 2. A model train locomotive according to claim 1 wherein the sound effect *means include a digital sound system and the means for shifting the pitch of the audible sound effect includes means for shifting a rate at which digital sound samples are produced by said digital sound system*.

III. ***Analysis***

This discussion focuses only on remaining areas of disagreement between the parties regarding claim construction.

A. ***Prosecution History Estoppel***

Based on prosecution history estoppel, defendant contends that plaintiffs conceded any claim in the '142 Patent that can be construed to cover remote control signals sent in binary (digital 1's and 0's) form. Specifically, defendant points out that in the prosecution history of the '017 Patent, the PTO examiner rejected any claims reflecting the transmission of data in binary form because no mention was made within the specification of the '017 Patent regarding the use of a binary data transmission form.

Plaintiffs contend that prosecution history estoppel is inapplicable to the facts here. The court agrees. Prosecution history estoppel may be a defense to an infringement claim based on the Doctrine of Equivalents if "an amendment is made [to the patent claim] to secure the patent and the amendment narrows the patent's scope." Festo Corp. v. Shoketsu Kinzoku Kogyo, 535 U.S. 722, 736, 122 S.Ct. 1831, 152 L.Ed.2d 944 (2002). As such, the estoppel is presumed to apply (the " *Festo* presumption") if the amendment is necessary to obtain the patent. *Id*. at 727.

Here, the PTO examiner rejected claims in the '017 Patent relating to signals sent in binary form because no mention of such signals was made within the patent's specification. Moreover, plaintiffs are not asserting infringement by equivalents. Accordingly, the court concludes that prosecution history estoppel does not apply under the facts of this case.

In addition, this case is in its initial claim construction stage. *See* Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed.Cir.1995) (*en banc*), *aff'd,* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) ("The first step in a patent case is to determine the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claim to the device being infringed ." [citation omitted)). If there is any merit to defendant's contention that plaintiffs abandoned a claim related to signals in binary form in the '142 Patent as well as the '017 Patent, its argument should be made later in this case, not at the claim construction stage.

B. '142 Patent ***Claim Construction***

Claim 1
a. A model train locomotive for use on a model railroad track that is coupled to a power supply for controllably applying *a polarity-reversible DC track power signal to the track*

Both parties agree the construction of the underlined term is central to this case. Plaintiffs assert that the

language means "a DC track power signal that flows in one direction and has the capability of being reversed, as distinguished from a current that has no direction of flow and whose polarity is reversed on a cyclical and continuous basis," *i.e.* an AC current. After ultimately conceding that the language does not implicate an originating AC power source for the track power signal with a rectifier to create DC power, defendant asserts that the term means:

a signal in which the current flows in one direction absent a polarity reversal. The signal must include a polarity-reversal capability, which, when activated, will reverse the direction of current flow. The signal must provide power to the model train for all its operations.

The court concludes that plaintiffs' construction is supported by the plain meaning of the language used in Claim 1 and is consistent with the specification which describes a "way of generating and receiving remote control signals for DC powered two or three rail trains that does not require a change in the DC operating standard." Ex. 1, '142 Patent, col 1, lines 25-30. In addition, during the prosecution of the patent before the PTO, the examiner, in initially rejecting Claims 1-23, noted the title of the claimed invention, "Signaling Techniques for DC and AC Powered Model Railroads," was not descriptive of the invention because AC powered units were not present. In response, plaintiffs deleted any reference to AC power. Def. Ex. 101 at 142-113. Finally, this construction is consistent with the National Model Railroad Association DC Operating Standard which provides for "direct current" with "[d]irection control by polarity reversing." Ex. 8, para.para. I and II.FN8

FN8. Defendant contends that plaintiffs, through Severson's testimony at the *Markman* hearing, improperly attempt to read into Claim 1 the terms "voltage controls the motor speed" and "the idle signal must be pure DC" that are found in the '142 Patent specification. Plaintiffs, however, have not sought to import those limitations into Claim 1. The court notes plaintiffs, in their initial claim construction memorandum, merely cite those terms in the context of describing the NMRA DC operating standard.

Defendant's proposed construction is ambiguous and incomplete because it omits any reference to an exclusive "DC power" supply, even though defendant concedes that an initial DC signal could be created using a pure DC source such as a battery.

Accordingly, the court adopts plaintiffs' construction which does not include an AC power source.

b. *Means for isolating the motor from the track so as to allow use of polarity-reversals on the track power signal to the track for controlling remote effects*

The parties agree this term in Claim 1 involves a "means-plus-function" and should be construed to include: "(1) a bridge rectifier; (2) a double-pole/double-thrown relay, (3) in the case of fast [polarity reversal pulses ("PRP")] signals, the motor's rotational inertia; and (4) equivalents to (1) and (3)."

c. Means responsive to polarity reversals on the DC track power signal for controlling remote effects *without reversing the motor* FN9

FN9. In its Reply, defendant also appears to dispute the term "polarity reversals on the DC track power signal for controlling remote effect." Because this term is used in prior claims, it has the same meaning here.

The patent specification states that "[s]ince most engines designed to work on model layouts receive power directly from the track rails, a [polarity-reversal] would cause the engines to reverse direction abruptly and a brief PRP may cause the engine to at least stutter. In either case, this is not an acceptable response." Ex. 1, col 11, lines 48-52. Defendant contends that this reference in the specification to a potentially unacceptable stutter on a polarity-reversal requires construing the term "without reversing the motor" to mean the "motor isolating means used must not allow the motor to reverse *or stutter* when a polarity reversal or polarity-reversal-pulse is received."

Plaintiffs contend that a "no stutter" limitation should not be read into the claim because the specification does not specifically identify such a limitation. *See* Liebel-Flarsheim Co. v. Madrad, Inc., 358 F.3d 898, 904 (Fed.Cir.2004) (although "claims 'must be read in view of the specification of which they are a part' ... it is improper to read a limitation from the specification into the claims" unless the specification language reflects a "clear lexicographic definition" rather than a "description of a "preferred embodiment.") (internal citations omitted). Id. at 904-05.

The court agrees with plaintiffs that, although the lack of a stutter on a polarity-reversal may be a preferred embodiment, there is no requirement or implication that a "no stutter" limitation must be read into Claim 1. Accordingly, the court rejects defendant's proposed construction. No additional construction is necessary.

Claim 8

A model train locomotive according to claim 1 further comprising a *motor reverse unit* for driving the motor according to a selectable direction state, whereby the motor direction is controllable independently of the polarity of the DC power signal applied to the track.

A device on board the model train retains a selected direction state, and it will continue to drive the train in the selected direction state even though the polarity of the track signal is reversed one or more times.

Defendant seeks to import the italicized limitation in order to describe the "motor reverse unit" identified in Claim 8. Defendant bases this limitation on Severson's testimony at the *Markman* hearing that the motor reverse unit "could" be described by that device and such a device is "the type of thing ... not the only thing ... that would be included in within claim 8." Tr. 95-96.

Contrary to defendant's characterization, Severson's testimony suggests only that the proposed description of the "motor reverse unit" in the specification is, at best, a preferred embodiment. There is no requirement that defendant's proposed limitation should be read into the claim.

Accordingly, the court rejects defendant's construction that imports the proposed limitation into Claim 8. Liebel-Flarsheim, 358 F.3d at 904-05.

Claim 10

In a DC powered model train locomotive having a motor, a *method of using polarity reversals of the DC track power signal as a remote control signal*

In briefing the construction of Claim 10, the parties were in substantial agreement on the construction of all terms except the language in the preamble. However, in its Reply, defendant for the first time contends that the term "using polarity reversals of the DC track power signal as a remote control signal" should be construed to exclude the use of "polarity reversals for binary 1's and 0's to create a remote control signal" because any claim relating to the use of binary codes was abandoned during the prosecution history. Plaintiffs contend the language should be construed as written. Plaintiffs do not specifically address the abandonment issue as to this claim since it was not raised in defendant's initial or response memoranda.

The court has already concluded it is premature at best to rule on whether plaintiffs' abandonment of a claim pertaining to the use of binary 1's and 0's in the '017 Patent applies to a substantially similar claim in the '142 Patent. For that reason, the court rejects as premature defendant's proposed construction of Claim 10 of the '142 Patent to exclude the "use of polarity reversals forming binary 1's and 0's to create a remote control signal."

Claim 15

A method according to claim 10 further comprising changing the direction state in response to a polarity reversal of the DC track power signal.

All voltage to the track is removed, reversing the polarity of the voltage in order to change the model train's direction state, and then the voltage is reapplied to the track.

Defendant seeks to add the italicized limitation based on language in the patent specification that identifies only two methods for changing the "direction state" (*i.e.*, the direction the train travels on the track): (1) "turn the track power off and then affect a [polarity-reversal] and then turn the power back on;" or (2) "use deliberate power interruptions to change motor directions." Ex. 1, col 12, lines 25-27 and lines 41-42. Plaintiffs contend the methods of "turning the track power off" or "interrupting" the power supply are merely examples of preferred embodiments and that, therefore, defendant's proposed limitation should not be imported into the claim. As another example of a method to change the train's direction, they offer the sending of a signal PR that means stop and reverse direction.

The court concludes defendant has the stronger argument on this issue. The specification plainly states that plaintiffs "are proposing two methods for the use to specify the desired direction of his locomotive." Ex. 1, col 12, lines 25-26. In addition, the specification makes no mention of the third method proposed by plaintiffs or any other method. The specification merely states: "We could also specify *how long this period of time with no power must be* before a PR signal is accepted as an engine reversal command to avoid any confusion from a momentary no-power conditions [*sic*] that may happen frown [*sic*] a normal PR remote control signal." Ex. 1, col 12, lines 30-34 (emphasis added). This language clearly contemplates a period of time when the power to the track will be interrupted completely in order to effect the change of direction.

Accordingly, the court concludes defendant's construction appropriately describes the cessation of power that is necessary to effectuate a change in the direction the train travels on the track.

C. '017 Patent ***Claim Construction Disputes***

Defendant concedes that the prosecution history as to the use of binary data transmission in the '017 Patent is not applicable at this stage of the case.

Claim 1

A model train locomotive having a motor for use on a model railroad track that is coupled to a power supply for controllably applying a track power signal to the track, the locomotive comprising:

a. *Means for determining a present speed of the locomotive over the track*

Defendant contends there are two ways for determining the speed of the locomotive on track: (1) by BEMF; or (2) by an "optical tachometer." Ex. 2, col 16, lines 16-24, and col 17, lines 16-28. Plaintiffs contend a third method is the use of the microprocessor which may contain an Onboard State Generator ("OBSG"), possibly stored in the microprocessor, which "will allow the user to select from a number of command control systems that will be available in the future." Ex. 2, col 31, lines 12-18. Plaintiffs contend the command control system includes the means to respond to a speed command.

The court agrees with defendant that only two methods for determining speed are specifically identified in the specification. The specification does not describe the OBSG as a means of determining present speed. Furthermore, at the *Markman* hearing, Severson agreed that BEMF and the optical tachometer are the only methods specifically disclosed in the '017 Patent for determining the speed of the train. Tr. 100-02.

The parties do not have a substantive disagreement over the construction of the term "present speed." According to defendant, it means the "speed right now" and according to plaintiffs, it means the "speed now existing or in progress."

b. *means for shifting pitch of the audible sound effects* so as to simulate the Doppler effect *as a substantially monotonic function* of said speed of the locomotive.

The parties agree that the term "means for shifting pitch of the audible sound effects" is a "means plus function" phrase. The structures, materials, and acts disclosed in this part of Claim 1 include the use of a microprocessor with read-only memory ("ROM") and random-access memory ("RAM") that also encompasses the OBSG. The shift in pitch can be accomplished by: (1) shifting the clock rate of the digital sound system to change the rate at which the output signal is sent to the output digital to analog converter; (2) using the on-board microprocessor to shift the rate at which the digital sound record is applied to the output digital to analog converter; or (3) equivalents thereof. Ex. 2, col 36, lines 54-61. The parties agree that the term "as a substantially monotonic function" means that any change in frequency is substantially proportional to the train's speed.

Claim 2

A model train locomotive according to claim 1 wherein the sound effect *means include a digital sound system and the means for shifting the pitch of the audible sound effect includes means for shifting a rate at which digital sound samples are produced by said digital sound system.*

During the course of briefing the construction of this term, the parties agreed that the operations described could be performed by a microprocessor. There were no other substantive differences in the construction of the term.

ORDER

In light of the foregoing, the court's claim construction of disputed terms is as follows:

'142 Patent:

Claim 1

A model train locomotive for use on a model railroad track that is coupled to a power supply for controllably applying *a polarity-reversible DC track power signal to the track,* the locomotive comprising:
a motor for driving the locomotive over the track;

means for isolating the motor from the track so as to allow use of polarity-reversals on the track power signal to the track for controlling remote effects; and

means responsive to polarity reversals on the DC track power signal for controlling remote effects *without reversing the motor*.

Claim 8

A model train locomotive according to claim 1 further comprising a *motor reverse unit* for driving the motor according to a selectable direction state, whereby the motor direction is controllable independently of the polarity of the DC power signal applied to the track.
A device on board the model train retains a selected direction state, and it will continue to drive the train in the selected direction state even though the polarity of the track signal is reversed one or more times.

Claim 10

In a DC powered model train locomotive having a motor, *a method of using polarity reversals of the DC track power signal as a remote control signal*.

Claim 15

A method according to claim 10 further comprising changing the direction state in response to a polarity reversal of the DC track power signal.
All voltage to the track is removed, the polarity of the voltage is reversed in order to change the model train's direction state, and then the voltage is reapplied to the track.

Construction

polarity-reversible DC track power signal to the track means "a DC track power signal that flows in one direction and has the capability of being reversed, as distinguished from a current that has no direction of flow and whose polarity is reversed on a cyclical and continuous basis."
"Means" include "(1) a bridge rectifier; (2) a double-pole/double-thrown relay, (3) in the case of fast [polarity reversal pulses ("PRP")] signals, the motor's rotational inertia; and (4) equivalents to (1) and (3)."

a "no stutter" limitation is not imported into the "means for controlling remote effects without reversing the motor."

Construction

The italicized language proffered by defendant as a limitation of the Claim is a preferred embodiment and, therefore, is not imported into Claim 8.

Construction

Whether a "method of using polarity reversals forming binary 1's and 0's to create a remote control signal" is a proper construction of this claim depends on whether plaintiffs abandoned such a method during the prosecution of the claim before the USPO. That determination has yet to be made.

Construction

The italicized language proffered by defendant is not a preferred embodiment, but an appropriate limitation described in the specification as the method by which the train changes direction on the track.

'017 Patent:

Claim 1

A model train locomotive having a motor for use on a model railroad track that is coupled to a power supply for controllably applying a track power signal to the track, the locomotive comprising:
a. *means for determining a present speed of the locomotive over the track*

Construction

There are two means for determining the present speed on the locomotive on the track:
(1) back electromotor force ("BEMF"); and

(2) an optical tachometer.

It is further ORDERED that within 30 days, the parties shall file an Amended Joint Claim Construction Statement identifying all of the construed claim terms that are agreed upon, and the disputed claim terms that have now been construed by the court in this Order. If the court has inadvertently omitted construction of a disputed term, then the parties shall notify the court. No further briefing will be allowed without permission of the court.

D.Or.,2009.
QSI Industries, Inc. v. ESU, LLC

Produced by Sans Paper, LLC.