

United States District Court,
E.D. New York.

SPIEL ASSOCIATES, INC,
Plaintiff.

v.

GATEWAY BOOKBINDING SYSTEMS, LTD,
Defendant.

No. 03-CV-4696 (FB)

June 21, 2007.

Todd Wengrovsky, Calverton, NY, for Plaintiff.

Michael S. Neustel, Neustel Law Offices, Ltd., Fargo, ND, Mark D. Risk, Filippatos Risk LLP, New York, NY, for Defendant.

REPORT AND RECOMMENDATION

ROANNE L. MANN, United States Magistrate Judge.

Plaintiff Spiel Associates, Inc. ("Spiel" or "plaintiff") brought this action against defendant Gateway Bookbinding Systems, Ltd. ("Gateway" or "defendant"), seeking damages resulting from Gateway's alleged infringement of patents held by Spiel. The parties mutually applied for a hearing pursuant to *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed.Cir.1995) (en banc), *aff'd*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996), to construe the contested terms of art within Spiel's patent claims. After the Honorable Frederic Block referred the matter to the undersigned magistrate judge for a *Markman* hearing and preparation of a report and recommendation, the parties consented to the appointment of a special master pursuant to Rule 53 of the Federal Rules of Civil Procedure. Currently pending before this Court are Spiel's objections to portions of the report prepared by Special Master Lawrence B. Goodwin (the "Special Master" or "Goodwin") construing the contested claim terms. FN1 For the reasons set forth below, this Court recommends that the Special Master's Report be adopted in its entirety.

FN1. The Report of Lawrence B. Goodwin, Pursuant to Fed.R.Civ.P. 53, Regarding Construction of U.S. Patents 6,547,502 and 6,726,426 (the "Report") has been docketed as Document # 83-1 in the Electronic Case Filing ("ECF") court file. For ease of reference, most of the citations in this opinion will include (in brackets) the corresponding ECF document number.

BACKGROUND

Spiel manufactures, distributes and sells bookbinding machinery that uses plastic spiral coils for binding

books. Plaintiff's Amended Verified Complaint ("Am.Compl.") [# 32] para. 1. The bookbinding industry traditionally has used two separate machines for creating spiral-bound books, one that forms plastic spiral coils (a "forming machine"), and another that inserts the coils through paper with previously punched holes (a "binding machine"). *See id.* para. 2; *see also* Affidavit [of Saul Spiel] in Support [of Verified Complaint] ("Saul Spiel Aff.") [# 1] para. 3. FN2 Recognizing certain inefficiencies in this system, Spiel developed a methodology to form the coils and bind the paper in a continuous automated process, or "inline system," by linking the two machines with a conveyor. Am. Compl. [# 32] para. 4-5; Saul Spiel Aff. [# 1] para. 5-6. Spiel applied for and received two patents for its "Combination Plastic Spiral Forming Machine And Semi-Automatic Plastic Spiral Binding Machine" (collectively, "the Patents"). *See* Am. Compl. [# 32] para. 7, 12; U.S. Patent No. 6,547,502 (filed Oct. 2, 2000) (the "' 502 Patent"); U.S. Patent No. 6,726,426 (filed Aug. 10, 2002) (the "' 426 Patent"). FN3

FN2. The Saul Spiel Affidavit is appended to plaintiff's original pleading, the Verified Complaint [# 1].

FN3. According to Spiel, the '426 Patent is "an incremental improvement over" the earlier Patent. *See* Plaintiff's Initial Markman Brief on Claim Construction ("Pl. Markman Br.") [# 68] at 3. Because the '426 Patent is a continuation of the '502 Patent, *see* Am. Compl. [# 32] para. 12, and contains many of the same claims and specifications, all citations hereinafter to the former will also apply to the latter, unless specifically indicated otherwise.

The Patents are reproduced as Exhibits A and B to plaintiff's initial *Markman* brief [# 68], and as Exhibits A and B to the Declaration of Michael S. Neustel in Support of Gateway's Memorandum Regarding Claim Construction of U.S. Patent Nos. 6,547,502 and 6,726,426 [# 67]. Hereinafter, exhibits appended to the Neustel Declaration will be cited as "Def. Ex. _____," exhibits appended to Spiel's initial *Markman* brief [# 68] will be cited as "Pl.Ex. _____," exhibits appended to Gateway's Responsive Memorandum Regarding Claim Construction of U.S. Patent Nos. 6,547,502 and 6,726,426 ("Gateway Resp. Claim Mem.") [# 70] will be cited as "Def. Resp. Ex. _____," and exhibits appended to Plaintiff's Brief in Objection to Portions of the Special Master's Report on *Markman* Patent Claim Construction ("Pl.Obj.") [# 85] will be cited as "Pl. Obj. Ex. _____." References to page numbers of exhibits appended to the parties' papers are to exhibit pagination, and not to the pagination of the documents contained therein.

Spiel's system, which it markets under the name "Coilmaster II," allegedly avoids the problems associated with prior integrated systems, which, Spiel contends, result in brittle plastic coils as a result of their use of rapid cooling. *See* Report [# 83-1] at 7; Saul Spiel Aff. [# 1] para. 6, 12. In Spiel's system, the coils are formed and cut to length by the coil forming machine, then fall onto a linkage conveyor that allows the coils to cool slowly under "ambient air" as they are conveyed to the binding machine. Report [# 83-1] at 7-8. The cooled coils are then used to bind books in the binding machine. *Id.* at 6. Spiel alleges that it first displayed an early model of the inline system at a trade show in Chicago in October 1999, and later exhibited the Coilmaster II system at a trade show in Miami in January 2000. *See* Saul Spiel Aff. [# 1] para. 10, 13.

Gateway manufactures and sells plastic coil formers, plastic coil binding machines, plastic filament and plastic coil. *See* Gateway's Memorandum Regarding Claim Construction of U.S. Patent Nos. 6,547,502 and 6,726,426 ("Gateway Claim Mem.") [# 66], at 1 & n. 3 (citing Plastikcoil, [http:// www.plastikcoil.com](http://www.plastikcoil.com) (last visited June 18, 2007)); Gateway's Second Amended Answer, Affirmative Defenses & Counterclaims to Spiel's Amended Complaint ("2d Am. Ans.") [# 49] para. 191. Saul Spiel, one of plaintiff's officers, alleges that while attending a trade show in September 2001, Spiel representatives noticed that Gateway was promoting an inline system called "PLASTIKOIL Concept III Interline System," which appeared to function

in a manner similar to Spiel's system. Saul Spiel Aff. [# 1] para. 19-20; *see* Am. Compl. [# 32] para. 22-24. Gateway claims that its system, in contrast to Spiel's, uses rapid cooling by blowing "non-ambient" air on the hot coil prior to cutting. *See* Gateway Claim Mem. [# 66] at 2. The coils are then dispensed onto an inclined "accumulator tray" to store the coils prior to insertion by the binding machine. Id.

Spiel commenced the instant action on September 16, 2003, alleging that, *inter alia*, Gateway's product infringed on its Patents. *See* Am. Compl. [# 32] para. 49-58. Gateway interposed a series of counterclaims, asserting patent invalidity and non-infringement, false advertising, trade libel, and antitrust violations. *See* 2d Am. Ans. [# 49] para. 98-201. On December 31, 2004, both parties requested that the Court conduct a *Markman* hearing to construe the terms of the Patents. *See* 12/31/04 Letter from Michael S. Neustel to Judge Block [# 56]. Following two rounds of briefing by both sides, FN4 Judge Block referred the *Markman* proceeding to the undersigned magistrate judge. *See* 3/29/06 Order [# 77]. Thereafter, the parties consented to having the hearing presided over by a special master pursuant to Rule 53 of the Federal Rules of Civil Procedure. *See* 5/10/06 Minute Entry for Proceedings Before Magistrate Judge Mann [# 79]. At the suggestion of the parties, the Court designated patent attorney Lawrence Goodwin to conduct a *Markman* proceeding and submit a report and recommendation regarding the claim construction issues raised by the parties. *See* 7/5/06 Order [# 82]. FN5

FN4. *See* Pl. Markman Br. [# 68]; Gateway Claim Mem. [# 66]; Plaintiff's Rebuttal Markman Brief on Claim Construction ("Pl.Rebuttal") [# 69]; Gateway Resp. Claim Mem. [# 70].

FN5. Special Master Goodwin was one of three candidates recommended by the parties and chosen by the Court after reviewing the backgrounds of each of the proffered candidates. Goodwin is a partner at the law firm of Kasowitz, Benson, Torres & Friedman LLP. He graduated from American University Washington College of Law in 1979, after receiving his Bachelor of Science in Electrical Engineering from the University of Maryland in 1975. He worked as a Patent Examiner with the United States Patent and Trademark Office from 1976 to 1979. *See* Kasowitz, Benson, Torres & Friedman LLP, [http://www.kasowitz.com/attorney/detail.aspx?id=b1cd515ecf55-41e3-8320-009857057065 &fromsearch=yes](http://www.kasowitz.com/attorney/detail.aspx?id=b1cd515ecf55-41e3-8320-009857057065&fromsearch=yes) (last visited June 19, 2007); Martindale.com, http://www.martindale.com/xp/Martindale/Lawyer_Locator/Search_Lawyer_Locator/search_detail.xml?STS=&LNAME=goodwin&CN=&PG=1&bc=65&CRY=&ratind=&FN=&FNAME=lawrence&STYPE=N&a=79ADE51F568FC5&l=01356DA2D3053B&type=2&pos=3&cnt=3 (last visited June 19, 2007).

The Special Master held a *Markman* hearing on September 19, 2006, and addressed each of the parties' twenty disputed claims. *See* Transcript of Markman Hearing dated September 19, 2006 ("Tr.") [# 83-2]. FN6 On November 20, 2006, the Special Master filed his Report construing the disputed claim terms. Spiel thereafter objected to the Report with respect to the construction of four of the disputed terms: (1) "conveyor;" (2) "hot binding coils;" (3) "first higher temperature;" FN7 and (4) "ambient air." *See* Pl. Obj. [# 85] at 1. FN8 Gateway did not object to any of the Special Master's recommendations and instead urged the Court to adopt those recommendations over Spiel's objections. *See* Gateway's Response to Plaintiff's Opposition to Special Master's Report on *Markman* Patent Claim Construction [# 86].

FN6. The hearing consisted of oral argument; no witnesses were presented.

FN7. Spiel conflated its objections to "hot binding coils" and "first higher temperature" into one section in its brief. *See* Pl. Obj. [# 85] at 7. For the sake of clarity, and because the Special Master's Report addressed the terms in different sections, this Report and Recommendation will discuss these terms separately.

FN8. As no objection was filed to any of the constructions of the other sixteen terms addressed in the Report, this Court need not review them under the same stringent standard (i.e., *de novo* review) as the terms to which Spiel objects. *See* Fed.R.Civ.P. 53(g)(3) advisory committee's notes; *see generally* *Alpex Computer Corp. v. Nintendo Co.*, No. 86-CV-1749 (KMW), 1994 WL 330381, at *4-5 (S.D.N.Y. July 11, 1994). However, even applying *de novo* review, the Court finds no fault with the Special Master's construction of these terms, many of which the parties acquiesced in at the *Markman* hearing. *See generally* Tr. [# 83-2].

APPLICABLE LAW

The first step in a patent infringement analysis is to determine the "meaning and scope of the patent claims asserted to be infringed," otherwise known as "claim construction or interpretation." *See* *Markman*, 52 F.3d at 976. The construction of patent terms is a question of law to be determined by the Court, *id.* at 979, applying the law of the Federal Circuit to issues of substantive patent law. *See* *Astra Aktiebolag v. Andrx Pharms., Inc.*, 222 F.Supp.2d 423, 486 (S.D.N.Y.2002). In assessing the Report of the Special Master, the Court reviews *de novo* those portions of the Report objected to by the parties and may, pursuant to Rule 53, "adopt or affirm; modify; wholly or partly reject or reverse; or resubmit to the master with instructions." *See* Fed.R.Civ.P. 53(g)(1); *In re Omeprazole*, No. M-21-81 (BSJ), MDL 1291, 2004 WL 1124653, at (S.D.N.Y. May 19, 2004).

"It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed.Cir.2005) (internal quotation marks omitted). "A court construing a patent claim seeks to accord a claim the meaning it would have to a person of ordinary skill in the art at the time of the invention." *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed.Cir.2004). Because this inquiry is an objective one, the Court must look to "those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean." *Id.*

The Federal Circuit has established a hierarchy of sources for courts to consider in construing patent claims. First the Court must examine the intrinsic evidence-which includes the language of the claims, FN9 the specification, FN10 and the prosecution history FN11-to determine the scope of the patent. *See* *Markman*, 52 F.3d at 979. Furthermore, as "the language of the claim defines the scope of the protected invention [,] ... resort must be had in the first instance to the words of the claim, words to which we ascribe their ordinary meaning unless it appears the inventor used them otherwise." *Bell Commc'ns Research, Inc. v. Vitalink Commc'ns Corp.*, 55 F.3d 615, 619-20 (Fed.Cir.1995) (citing *Yale Lock Mfg. Co. v. Greenleaf*, 117 U.S. 554, 559, 6 S.Ct. 846, 29 L.Ed. 952 (1886), and *Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 759 (Fed.Cir.1984)) (internal quotation marks omitted). Absent "an express intent to impart a novel meaning to the claim terms," terms in a claim "are presumed to take on the ordinary and customary meanings attributed to them by those of ordinary skill in the art." *Mars, Inc. v. H.J. Heinz Co.*, 377 F.3d 1369, 1373 (Fed.Cir.2004) (internal quotation marks omitted).

FN9. The claims serve to "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention." *See* 35 U.S.C. s. 112.

FN10. "The specification contains a written description of the invention which must be clear and complete enough to enable those of ordinary skill in the art to make and use it." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed.Cir.1996).

FN11. "[The prosecution] history contains the complete record of all the proceedings before the Patent and Trademark Office, including any express representations made by the applicant regarding the scope of the claims." *Vitronics*, 90 F.3d at 1582.

While the ordinary meaning of the claim language may in certain cases be readily understood, "patentees frequently use terms idiosyncratically," and thus "the meaning of a claim term as understood by persons of skill in the art is often not immediately apparent." *Phillips*, 415 F.3d at 1314. The Court therefore must "review the specification to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning." *Vitronics*, 90 F.3d at 1582 ("Although words in a claim are generally given their ordinary and customary meaning, a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the patent specification or file history."); *see* *Markman*, 52 F.3d at 979 ("For claim construction purposes, the [specification] may act as a sort of dictionary, which explains the invention and may define terms used in the claims."); *cf.* *Athletic Alternatives, Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1578 (Fed.Cir.1996) (stating that where the specification does not define a claim term or otherwise suggest that the patentee "sought to assign to claim terms anything but their ordinary and accustomed meanings, those are the meanings we must give them"). Because the specification "must be clear and complete enough to enable those of ordinary skill in the art to make and use" the invention, the specification is always highly relevant to-if not dispositive of-the claim construction analysis. *Vitronics*, 90 F.3d at 1582 ("[The specification] is the single best guide to the meaning of a disputed term."). "[T]he written description [in the specification] can provide guidance as to the meaning of the claims, thereby dictating the manner in which the claims are to be construed, even if the guidance is not provided in explicit definitional format." *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1344 (Fed.Cir.2001). Nevertheless, limitations appearing in the specification do not necessarily limit the claims. *See* *Interactive Gift Express, Inc. v. CompuServe Inc.*, 256 F.3d 1323, 1331 (Fed.Cir.2001). In other words, "the claims must be read in view of the specification, but limitations from the specification are not to be read into the claims." *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1326 (Fed.Cir.2002) (internal citations omitted).

The final form of intrinsic evidence consists of the prosecution history, which includes all express representations made by the patentee during the application process regarding the scope of the claims; the prosecution history "is often of critical significance in determining the meaning of the claims." *Vitronics*, 90 F.3d at 1582; *see also* *Markman*, 52 F.3d at 980 ("[The prosecution history] is of primary significance in understanding the ... true meaning of language used in the patent claims"). "[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Phillips*, 415 F.3d at 1317. Accordingly, any "[a]rguments and

amendments made during the prosecution of a patent application ... must be examined to determine the meaning of terms in the claims." *Southwall Techs. v. Cardinal IG Co.*, 54 F.3d 1570, 1576 (Fed.Cir.1995). In fact, "even where the claim language is not ambiguous, the prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution." *Schumer v. Lab. Computer Sys.*, 308 F.3d 1304, 1313 (Fed.Cir.2002) (quoting *Southwall Techs.*, 54 F.3d at 1576) (internal quotation marks omitted).

If the intrinsic evidence unambiguously establishes the meaning of a claim, "a court may not rely on extrinsic evidence for purposes of claim construction." *Hockerson-Halberstadt, Inc. v. Avia Group Int'l, Inc.*, 222 F.3d 951, 955 (Fed.Cir.2000); *see also* *Vitronics Corp.*, 90 F.3d at 1583 ("In most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence."). In contrast, where the intrinsic evidence is not dispositive, a court may, in its discretion, rely on extrinsic evidence-which consists of "all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises"-to arrive at a "correct conclusion as to the true meaning of the language employed in the patent." *Markman*, 52 F.3d at 980 (quoting *Seymour v. Osborne*, 11 Wall. 516, 78 U.S. 516, 546, 20 L.Ed. 33 (1870)) (internal quotation marks omitted). Extrinsic evidence may "shed useful light on the relevant art, [in certain circumstances,] but is less significant than the intrinsic record in determining the legally operative meaning of disputed claim language." *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 862 (Fed.Cir.2004) (internal quotation marks omitted); *see also* *Phillips*, 415 F.3d at 1319 ("[E]xtrinsic evidence may be useful to the court, but it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence.").

DISCUSSION

A. "Conveyor"

The parties proposed two constructions of the term "conveyor." Relying on dictionary definitions, the testimony of the inventor and other experts, and case law, Spiel urged that "conveyer" should be broadly construed as "an item that transports something from Point A to Point B." *See* Pl. Markman Br. [# 68] at 9-11. In contrast, Gateway argued that the term "conveyor" means "a conveying structure having a moving surface for carrying plastic coils in a relatively slow and controlled manner for slowly cooling the hot binding coils." Gateway Claim Mem. [# 66] at 20.

In his Report, the Special Master recommended that the term "conveyer" be construed, "for purposes of the present case, as a device that includes a moving surface for transporting articles, as opposed to a chute or a slide." Report [# 83-1] at 17. He based this construction on the specification and prosecution history of each of the Patents, confirmed by "dictionary definitions and case law precedent." *Id.* Spiel now argues, in its objection, that "conveyor" need not have a moving surface, as persons skilled in the art understand "conveyor" to mean "a device that transports items from one place to another." Pl. Obj. [# 85] at 1.FN12

FN12. The forming and binding machines in Gateway's allegedly infringing product are connected by an "accumulator" having an inclined non-moving surface along which the coils move prior to their insertion in the paper in the binding machine. *See* Pl. Markman Br. [# 68] at 11; Gateway Claim Mem. [# 66] at 2.

i. Review of Intrinsic Evidence

As used in the claims, the term "conveyor" suggests a mechanical apparatus that actively transports something from one place to another. Claim 1 of the '502 Patent includes reference to "a conveyor for *carrying* ... binding coils from [the] forming machine to [the] binding machine under ambient air conditions, the length of said conveyor being selected to provide enough slow cooling time to bring the temperature of said binding coils down to close to room temperature and a solid, non-brittle state." '502 Patent col.14 ll.18-23 (emphasis added). The term "conveyor" also appears in claims 2 and 7 of the '426 Patent. *See* '426 Patent col.14 ll.38-39 & col.16 ll.1-4. FN13

FN13. However, claim 1 of the '426 Patent differs from claim 1 of the earlier Patent in that, among other things, the term "conveyor" has been replaced with "means for carrying," '426 Patent col.14 l.31, the construction of which the parties agreed upon at the *Markman* hearing. *See* Report [# 83-1] at 23-24; Tr. [# 83-2] at 23:24-26:7.

Even assuming *arguendo* that "the dispositive claim language on its face is susceptible to two equally plausible meanings," *see* *Athletic Alternatives*, 73 F.3d at 1579, the specification supports the Special Master's construction of the term "conveyor," and belies Spiel's expansive reading of this term. The description of the system in the Patents explains that the cut but "still-hot plastic spiral coils ... fall into a narrow compartment formed by adjacent vanes *attached to a conveyor belt*." '426 Patent col.13 ll.6-9 (emphasis added). Then, the "[c]ooling conveyor *moves intermittently* to index to the next empty compartment every time a segment of coil is cut." *Id.* col.13 ll.10-12 (emphasis added). "As it takes some time *for the cooling conveyor to advance*, a coil in the midsection would be significantly cooler by action of ambient air." *Id.* col.13 ll.12-14 (emphasis added). All of this language describes an apparatus with a moving surface. *See also id.* col.2 ll.28-30 ("After the plastic coil is formed, it is cut and advanced upon a *conveyor belt* having a plurality of compartments, each holding formed plastic coils.") (emphasis added).

Furthermore, the specification in each Patent explains that the "linkage cooling conveyor" is comprised of a "[w]ide belt" engaged by a pulley driven by a gearmotor. *See id.* col. 13 ll.32-34. The speed of the belt is controlled by a motor controller. *Id.* col.13 ll.37-40. The specification additionally provides that the "wide belt" is the preferred method for conveying the plastic coils, although "other configurations for the coil advancing conveyor may be used." *Id.* col.2 ll.44-49. The use of the passive voice in describing the operation of the "coil advancing conveyor," coupled with the reference to "configurations," further suggests that other such methods would similarly require a moving surface, among other parts. *See id.* col.2 ll.36-38 ("[T]he coils may be cooled *by being advanced* on the conveyor at a speed sufficient for the temperature of the plastic coil to lower."), col.3 ll.1-2 ("[T]he cooled plastic coil *is advanced* upon the conveyor") (emphasis added). Finally, the illustration referenced by this description as showing the "essential working parts of [the] linkage cooling conveyor" clearly depicts a moving surface. *See id.* col.13 ll.29-30; *id.* fig.23; *see also id.* col.6 ll.11-12. All of the relevant language in the two Patents' specifications thus confirms that a "conveyor" means an apparatus having a moving surface.

Contrary to Spiel's contentions, *see* Pl. Obj. [# 85] at 3-4, this conclusion does not "read limitations into a claim," but, quite properly, reads the language of the claims in light of the specification. *See* *Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed.Cir.1998) ("[T]here is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specification."); *Teleflex*, 299 F.3d at 1326. The claims describe a conveyor that actively moves the hot coils, and the specification confirms this reading. Furthermore, as previously noted, the specification explicitly states that "other *configurations* for the coil advancing conveyor may be used." *See* '426 Patent

col.2 ll.44-45 (emphasis added). It is significant that Spiel chose the word "configurations," as opposed to "methods" or "systems," as this formulation suggests that Spiel meant to encompass other versions of the detailed, specific conveyor described therein, and not a conveyor without a moving surface. *See generally* SciMed Life Sys., 242 F.3d at 1341-42 (citing cases in which claims were given a narrow construction in light of the written description where the specification indicated that the claimed invention used a specific methodology or device). While the law is clear that the claim language is broader than the particular "embodiment" appearing in the specification, *see* Electro Med. Sys., S.A. v. Cooper Life Scis., 34 F.3d 1048, 1054 (Fed.Cir.1994), it does not follow that the claim language in these Patents is sufficiently broad to encompass an apparatus with a non-moving surface, especially when viewed in the light of the language of the specification.

The prosecution history surrounding the '426 and '502 Patents provides additional support for the Special Master's construction of the term "conveyor." The United States Patent and Trademark Office ("USPTO") initially rejected Spiel's application for the '426 Patent, on the ground that granting it would result in double patenting given prior art U.S. Patent No. 4,249,278 (filed Jul. 13, 1979) ("Pfaffle"). *See* Amendment [to Patent Application # 10/215,656, dated November 26, 2003] ("'426 Amendment") [Def. Ex. I] [# 67-10], at 12. Specifically, the USPTO had rejected one of Spiel's claims as "being unpatentable over the cited art of Pfaffle [] in view of Primeau ' 156." *See* id.FN14

FN14. The Primeau patent taught cooling the coil in the forming machine with a fan. U.S. Patent No. 6,190,156 (filed Feb. 20, 2001) ("Primeau") [Def. Ex. L] [# 67-13], at fig.1, col.4 ll.31-34, col.7 ll.10-13; *see also* Report [# 83-1] at 14.

In its Amendment filed in response, Spiel distinguished the prior art from the apparatus described in its claims, and ascribed a narrow meaning to the term "conveyor." Spiel argued that although the USPTO noted that Pfaffle had a conveyor, Pfaffle "actually has a roller driven mandrel, not a conveyor." *Id.* at 13. That argument by Spiel is inconsistent with the position it takes in this litigation, to wit, that a "conveyor" is any item or apparatus that transfers something from one point to another. *See* Gateway Resp. Claim Mem. [# 70] at 4. The broader definition now advanced by Spiel clearly would encompass the mandrel in Pfaffle, which transports the coil to the binding machine. As the prosecution history shows that Spiel disclaimed an apparatus that, by whatever means, caused the coils to be moved from one location to another, it cannot now seek a construction that would reach all such apparatus. *See* Schumer, 308 F.3d at 1313. The prosecution history thereby supports the Special Master's conclusion that Spiel's current construction of "conveyor" is overly broad. *See* Report [# 83-1] at 18.

Spiel had also amended its '502 Patent application for similar reasons. Spiel's initial claims did not specify how the coils were to be conveyed, instead claiming "a cooler cooling said formed hot binding coils to a solid, non-brittle state." *See* Application for Combination Plastic Spiral Forming Machine and Semi-Automatic Plastic Spiral Binding Machine dated October 2, 2000 [Def. Resp. Ex. FF] [# 70-7], at 35. Following an interview with Spiel's representative and counsel on January 8, 2002, the USPTO examiner concluded that, if amended as proposed by Spiel, the claim "appears to [be] distinguish [ed] over prior art of record [Pfaffle]." *See* USPTO Interview Summary [Def. Resp. Ex. GG] [# 70-8]. Spiel thereafter filed a written amendment, modifying the claim to read "a conveyor for carrying said binding coils [from the first machine to the second]," which language appeared in the Patent as approved. *See* Amendment [to Patent Application # 09/677,489, dated January 31, 2002] [Def. Ex. E] [# 67-6] ("'502 Amendment"), at 3. This amendment, proposed to avoid unpatentability under Pfaffle, reveals that Spiel was not claiming any and all

transportation apparatus, as Spiel replaced the original, more general claim for "a cooler cooling said formed hot binding coils to a solid, non-brittle state" to the more specific "conveyor for carrying." *See* Gateway Resp. Claim Mem. [# 70] at 6.

Spiel additionally argues, without support, that a chute, which does not have a moving surface, qualifies as a conveyor. *See* Pl. Obj. [# 85] at 4-7. However, the specification expressly mentions a "chute" as an entirely separate part of the inline system without a moving surface. *See* '426 Patent col.7 ll.21-23 (describing "chute" that feeds spiral wire to mandrel); *see also* Report [# 83-1] at 17; Tr. [# 83-2] at 27:4-18 (Special Master explains that the distinction in the Patent between "conveyor" and "chute" supports the conclusion that a conveyor is something that "at least has a moving surface"). FN15 By implication, Spiel's failure to include the term "chute" in a part of the specification describing the "conveyor" suggests that Spiel intended the latter to mean something other than the former.

FN15. The specification language and diagrams describing the chute originate from an earlier Spiel patent for a binding machine, of which the '502 Patent is a continuation-in-part. *See* U.S. Patent No. 5,890,862 (filed Apr. 21, 1997) ("'862 Patent"), *available at* [http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1 & Sect2=HITOFF & d=PALL & p= 1 & u=\(R\)nethtml\(R\)PTO\(R\)srchnum.htm & r=1 & f=G & l=50 & s1=5,890, 862.PN. & OS =PN/5,890, 862 & RS=PN/5,890,862](http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=(R)nethtml(R)PTO(R)srchnum.htm&r=1&f=G&l=50&s1=5,890,862.PN.&OS=PN/5,890,862&RS=PN/5,890,862), fig. 1, col.3 ll.52-54. Spiel now argues that "chute," as used in the '862 Patent, describes "the infeed mechanism [for spiral coils] of the separate 'offline' binding machine, because the piece did not transfer articles from one machine to another." Pl. Obj. [# 85] at 5. However, the '862 Patent in no way indicates that Spiel used the language "chute," as opposed to "conveyor," for the reason now asserted by Spiel. Indeed, the chute in the '862 Patent, which serves to transport spirals to a mandrel prior to binding, readily falls within the broad construction of the term "conveyor" that Spiel proposes in this litigation. *See* '862 Patent col.4 ll.2-4.

Furthermore, the prosecution history similarly supports a distinction between the terms "chute" and "conveyor." In a declaration submitted to the USPTO on May 20, 2003, Spiel explained that at the October 1999 Chicago trade show, at which it displayed its first inline system, the forming machine did not have an "exit conveyor." *See* Declaration [of Saul Spiel to the United States Patent Office, dated August 10, 2002] ("Declaration") [Def. Ex. G] [# 67-8], at 3; Saul Spiel Aff. [# 1] para. 10. Accordingly, "a chute made from paper and cardboard was quickly designed and mounted with tape onto the end of the forming machine." Declaration [Def. Ex. G] [# 67-8] at 3. The declaration further explained that the coils were "funneled" (not "conveyed") "onto the in-feed conveyor of the binder." *Id.*; FN16 *see also* Saul Spiel Aff. [# 1] para. para. 11-12 (indicating that after the Chicago trade show, PVC Spiral Supply, at the direction of Spiel, completed development of the "conveyor"); Am. Compl. [# 32] para. 16 (same). As the Special Master reasonably concluded, Spiel thereby distinguished the term "conveyor" from "chute," "the latter of which does not have a moving surface." *See* Report [# 83-1] at 17; *see also* Tr. [# 83-2] at 45:23-46:6.FN17

FN16. The Declaration made no further mention of the binding machine's "in-feed conveyor," and this language appears nowhere in either of the Patents.

FN17. Spiel notes that it filed its patent application just under one year after the Chicago trade show, and thus avoided the operation of the "one year rule" of 35 U.S.C. s. 102(b), which bars issuance of a patent where the inventor displayed his or her work more than one year before the filing of the patent application; Spiel contends that the timing of its application for a patent proves that Spiel viewed the "cardboard piece

[as] just another type of conveyor." *See* Pl. Obj. [# 85] at 7. However, even if Spiel did hold that view, its subjective beliefs do not determine the meaning of the terms in its Patents. *See* Markman, 52 F.3d at 985 ("The subjective intent of the inventor when he used a particular term is of little or no probative weight in determining the scope of a claim (except as documented in the prosecution history).").

ii. Review of Extrinsic Evidence

Spiel relies heavily, if not exclusively, on extrinsic evidence to support its expansive construction of the term "conveyor." However, even if the Court were to look beyond the intrinsic evidence in this case, the extrinsic evidence in fact provides further support for the conclusion that "conveyor" should be read to require a moving surface.

Citing truncated versions of two Merriam-Webster dictionary definitions, Spiel claims that all major dictionaries define "conveyor" consistent with Spiel's broad interpretation. *See* Pl. Markman Br. [# 68] at 9. The complete definitions suggest otherwise, as both indicate a mechanism that actively moves items. *See* Merriam-Webster's Collegiate Dictionary 254 (10th ed.1999) [hereinafter Webster's] (defining "conveyor" as "one that conveys[, as] a mechanical apparatus for moving articles or bulk material from place to place (as by an endless moving belt or chain of receptacles)"); Webster's Revised Unabridged Dictionary 319 (1913 ed.), *available at* [http://machaut.uchicago.edu/?resource=Webster's & word=conveyor & use1913=on & use1828=on](http://machaut.uchicago.edu/?resource=Webster's&word=conveyor&use1913=on&use1828=on) (last visited June 18, 2007) ("A contrivance for carrying objects from place to place; esp., one for conveying grain, coal, etc.-as a spiral or screw turning in a pipe or trough, *an endless belt* with buckets, or a truck running along a rope.") (emphasis added).FN18 Thus, both definitions contemplate a moving surface or some other mechanism that actively-not passively, as with a chute-conveys the item from one point to another.FN19

FN18. *See also* Webster's New World Collegiate Dictionary 319 (4th ed.2000) ("one that conveys; esp. a mechanical contrivance, as a continuous chain or belt ... for conveying something"); Oxford English Dictionary, *available at* [http://dictionary.oed.com/cgi/entry/50049236?single=1 & query_type=word & query word=conveyor & first=1 & max_to_show=10](http://dictionary.oed.com/cgi/entry/50049236?single=1&query_type=word&query_word=conveyor&first=1&max_to_show=10) (last visited June 14, 2007) [hereinafter OED] ("A thing that conveys or transmits; [attributively,] an endless belt of rubber, canvas, etc., running over rollers or the like, on which objects or material can be conveyed").

FN19. Furthermore, in construing a patent claim, the Court must determine "what one of ordinary skill in the art *at the time of the invention* would have understood the term to mean," *see* Markman, 52 F.3d at 986 (emphasis added); hence, a dictionary definition predating the invention by over seventy-five years (*see* Pl. Markman Br. [# 68] at 9) is of little significance.

As further support for its broad construction, plaintiff cites the decision in *Lantech, Inc. v. Keip Mach. Co.*, 32 F.3d 542 (Fed.Cir.1994), which approved the district court's conclusion that a conveyor is "an apparatus that transports articles from one place to another." *See* Pl. Markman Br. [# 68] at 11 (quoting *Lantech*, 32 F.3d at 547). However, the Federal Circuit further stated that "[t]he term conveyor, as used in the claims and described in the specification always refers to an operative device or structure which would ordinarily be considered a conveyor. A conveyor necessarily includes components such as belts, slider plates, and drives, in addition to a moving surface." *Lantech*, 32 F.3d at 547; *see also id.* ("While a conveyor has a moving

surface, a moving surface alone is not a conveyor."). The *Lantech* court's construction of "conveyor" is thus closer to-and perhaps even narrower than-the Special Master's construction in this case, and undermines the expansive reading proposed by Spiel.

Spiel additionally relies on testimony from four experts, including the inventor and assignor of the Patents. See Pl. Markman Br. [# 68] at 9-10. Notably, Spiel conceded in its initial *Markman* brief that, after giving the claim terms "their ordinary meaning, ... the Court need not resort to 'extrinsic evidence' (expert reports, testimony, etc.) to properly interpret the claims." *Id.* at 1. Furthermore, the testimony cited by Spiel on the meaning of "conveyor" is either speculative, not specific to the bookbinding industry, or both. See Phillips, 415 F.3d at 1318 ("[Although] expert testimony can be useful ... to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field [,] ... conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court."); see also Markman, 52 F.3d at 985 ("[The subjective intent of the inventor ... is of little or no weight]"). FN20

FN20. In addition, at the *Markman* hearing, Spiel proffered evidence, apparently gathered from various web sites, of "different types of conveyors without moving surfaces, including chute conveyors." Tr. [# 83-2] at 30:10-13; see Pl. Obj. Ex. A [# 85-2]. As there was no proof that any of those conveyors were used in the bookbinding industry, the Special Master reasonably concluded that the proffered evidence was "of limited probative value." Tr. [# 83-2] at 36:12-16; Report [# 83-1] at 2. In addition, in its objection to the material as new evidence, Gateway asserted that based on an initial review, those conveyors could not operate in the type of inline system at issue here. Tr. [# 83-2] at 37:10-25. Spiel ignores these arguments in its objection brief.

Accordingly, as none of Spiel's extrinsic evidence supports its proposed construction of "conveyor," the Special Master correctly concluded that Spiel's interpretation was overly broad. See Report [# 83-1] at 18.FN21

FN21. Even if the claims' use of the term "conveyor" is deemed to be ambiguous as to its scope, Spiel's broad interpretation must be rejected. Because the intrinsic evidence does not establish by a "satisfactory degree of certainty" that the claims encompass non-moving surfaces, the Special Master's narrow interpretation controls. See *Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp.*, 93 F.3d 1572, 1581 (Fed.Cir.1996) ("[T]o the extent that the claim is ambiguous, a narrow reading which excludes the ambiguously covered subject matter must be adopted.") (citing *Athletic Alternatives*, 73 F.3d at 1578-81).

B. "Hot Binding Coils"

Spiel further objects to the Special Master's construction of the term "hot binding coils." Spiel argued in its initial *Markman* brief that "hot" describes the temperature of the coil at the point that it leaves the forming machine and begins to travel on the patented cooling conveyor. See Pl. Markman Br. [# 68] at 13. In contrast, asserting that "plastic coil forming temperatures typically exceed 190 (deg.)F to make the plastic filament malleable for forming on a forming mandrel," Gateway proposed in its *Markman* brief that "hot binding coils" be construed to mean "previously cut plastic spiral coils having a temperature exceeding 190 (deg.)F." Gateway Claim Mem. [# 66] at 20. Spiel responded that Gateway's construction was an "oxymoron" because the plastic at that temperature is still in thread form, rather than in separate cut coils. See Pl. Rebuttal [# 69] at 8. Spiel reiterated that, construed in tandem, "first higher temperature" and "hot

binding coils" "describe the coils at the beginning of the patented cooling conveyor (when the exterior of the coil is at 104 (deg.))." *Id.* In essence, the parties dispute whether a binding coil is still "hot" if some cooling has occurred (i.e., if a cooling mechanism such as a fan is used) within the forming machine.

Rejecting both sides' proposals, the Special Master construed "hot binding coils" to mean "coils formed in the coil forming machine prior to cooling." Report [# 83-1] at 12. He further noted that the only cooling described in the Patents takes place along the conveyor between the two machines. *Id.*; *see also* Tr. [# 83-2] at 107:23-108:3. In its objection, Spiel contends that extrinsic evidence, which the Special Master declined to consider, supported its contention that all forming machines contain an internal cooling system. Pl. Obj. [# 85] at 8.

i. Review of Intrinsic Evidence

The intrinsic evidence supports the Special Master's construction of the term "hot binding coils." The '426 Patent claims "a coil forming machine for heating, forming and cutting discrete segments of hot binding coils at a first higher temperature," without reference to cooling at any point in the formation process. '426 Patent col.14 ll.25-27; *see also* '502 Patent col.14 ll.14-15 (claiming "a coil forming machine forming hot binding coils at a first higher temperature"). The claim language thereby suggests that the coils are brought to this higher temperature in the forming process and then cooling commences under ambient air along the conveyor. *See* '426 Patent col.14 ll.31-33; '502 Patent col.14 ll.18-20. It follows, then, that the coils are "hot" throughout the forming process, and are not subjected to any cooling apparatus or method.

An examination of the specification buttresses this conclusion. The specification states that in typical forming machines, the plastic thread is preheated and then wound "on a mandrel where it emerges in free air as a hot spiral coil," whereupon "[t]he hot, but rigid, plastic spiral coil emerges from the cutter." '426 Patent col.12 ll.63-67 & col.13 ll.1-2. In contrast to prior systems, wherein the cut coils "would fall into a bin for packaging or storage," in the Spiel system the "*still-hot plastic spiral coils* are cut to the length required for the particular book being bound." '426 Patent col.13 ll.3-7 (emphasis added). Spiel contends that its use of the word "still" in the specification indicates that " 'hot' describes the coil when it *exits* the forming machine and enters the cooling conveyor," and that coils may thus still fall within the meaning of "hot" even if some cooling has taken place within the forming machine. *See* Pl. Markman Br. [# 68] at 14 (emphasis in original). The Special Master explicitly rejected this argument as "contrary to the specification and prosecution history." *See* Report [# 83-1] at 15. Indeed, examining the plain language of the specification, the use of the word "still" suggests that after being cut by the guillotine, the coils are at essentially the same temperature as upon emerging from the mandrel. The Patent's abstract FN22 likewise indicates that no cooling takes place until the coils are cut. *See* '426 Patent abstract ("[A] plastic spiral coil is formed at a first raised temperature, then cut ..., cooled and then advanced toward [the binding machine].").

FN22. The abstract, which appears at the outset of the patent and summarizes the invention, is considered to be part of the specification. *See, e.g.,* Pandrol USA, LP v. Airboss Ry. Prods., Inc., 320 F.3d 1354, 1363 & n. 1 (Fed.Cir.2003).

Finally, the prosecution history reveals that Spiel explicitly stated that no cooling takes place prior to the cutting of the coils. In the '426 Amendment, which Spiel submitted in response to the USPTO's rejection of one of its claims as unpatentable under Pfaffle and Primeau, Spiel distinguished its process over the prior art based on the different cooling processes. Spiel stated that in contrast to Pfaffle, in which "[t]he spiral coil is

cut after cooling[, i]n the present invention, ... *the spiral coil is cut into segments prior to cooling.*" '426 Amendment [Def. Ex. I] [# 67-10] at 12 (emphasis added). Spiel analogized the process in Primeau, which uses a fan "to promote the cooling," to that of Pfaffle, arguing that the use of "ambient air with natural convection is not suitable in Primeau," which requires "[m]ore rapid heat dissipation as by forced convection (i.e. a fan) or refrigeration." *Id.* at 12-13. Spiel thereby concluded that the prior art did not teach cutting hot coils. *See id.* at 14 ("A new independent claim has been added emphasizing the feature of cutting the coil into segments *before cooling and providing for cooling of the segments* on [the] conveyor *The cutting of the hot coil into segments prior to cooling is not found in the art of record, as already noted.*") (emphasis added).

Furthermore, in the Notice of Allowance, the patent examiner stated that Spiel's claim as amended was allowable subject matter because no prior art taught an inline system comprised of a coil forming machine "for heating, forming and cutting discrete segments of *hot binding coils at a first higher temperature,*" and that Pfaffle and Primeau do not "anticipate or render obvious applicant's invention" since neither involved "cutting the hot coils into discrete segments and cooling through the use of ambient air." *See* Notice of Allowance and Fee(s) Due ("Notice of Allowance") [Def. Ex. J] [# 67-11], at 6-7 (emphasis in original). Based on the prosecution history and other intrinsic evidence, the Special Master correctly concluded that "Spiel made it clear that 'hot coils' were coils that had been formed but not yet cooled." Report [# 83-1] at 13.

Spiel further contends that some form of cooling-generally through the use of a small fan-always takes place within coil forming machines in order to set the helical shape of the coils. *See* Pl. Markman Br. [# 68] at 14-15 ("[T]he device in question is simply a fan that has been known in the art for decades and used in all forming machines to bring the temperature of [the] coil down *somewhat* from its highest temperature prior to the coil's exit from the forming machine, at which point it is *still* too hot for immediate binding. Everyone in the industry knows this.") (emphasis in original). However, whatever the nature of conventional forming machines, the fact remains that Spiel's construction of the claim language is not supported by the intrinsic evidence, which describes drawbacks in the prior art and Spiel's solutions to those problems. Indeed, in its '426 Amendment, Spiel expressly distinguished Primeau's cooling via "forced convection (i.e. a fan)," which Spiel asserted resulted in increased brittleness of the coils. *See* '426 Amendment [Def. Ex. I] [# 67-10] at 13. In addition, the Notice of Allowance indicates that patentability was based, at least in part, on the assumption that no cooling takes place inside the forming machine. *See* Notice of Allowance [Def. Ex. J] [# 67-11] at 6-7; *see also* Report [# 83-1] at 15. Furthermore, in requesting *ex parte* reexamination of both Patents after initiating this lawsuit, Spiel again disclaimed the use of a fan. *See* Request for Reexamination [of Patent No. 6,547,502, dated June 25, 2004] [Def. Ex. M] [# 67-14] at 6 ("Through experimentation, Mr. Spiel discovered that if ambient air cooling was employed *in place of* vortex or chilled air cooling, that the aforementioned brittleness cannot occur.") (emphasis added); Request for Reexamination [of Patent No. 6,726,426, dated June 15, 2004] [Def. Ex. N] [# 67-15] at 6 (same quotation with respect to the '426 Patent). Not surprisingly, the specification makes no mention of a fan, or any other cooling device, within the forming machine.

Spiel argues unpersuasively that that omission is of no consequence because "[t]he Spiel patents do not require usage of any particular forming machine." *See* Pl. Markman Br. [# 68] at 15. Gateway rightly responds that the intrinsic evidence contradicts this assertion. *See* Gateway Resp. Claim Mem. [# 70] at 13-14. As discussed *supra*, Spiel expressly distinguished its system from those described in the Pfaffle and Primeau patents. Although Spiel asserts in this lawsuit that "[a] detailed description of the [pre-existing machines] was unnecessary," Pl. Markman Br. [# 68] at 15, it nevertheless included detailed illustrations

and descriptions of forming machines in the Patents, both of which conspicuously lack any sort of cooling mechanism. *See* '426 Patent col.12 ll.28-39, figs.22 & 24; *see also* Report [# 83-1] at 16 ("[T]he level of detail of the forming machine set forth in the Spiel patents ... would certainly have admitted the simple reference to a cooling fan, particularly since the invention was directed to solving prior art problems associated with the cooling of coils."); Tr. [# 83-2] at 103:15-104:7.

In its objection brief, Spiel now argues that "when the plastic is within the forming machine, it is in the form of a continuous thread of filament attached to a large spool outside of the machine," whereas the coils *qua* coils do not appear until after leaving the forming machine. Pl. Obj. [# 85] at 7-8. According to Spiel's latest theory, no coils exist within the forming machine, and furthermore, given that the guillotine cutter resides at the exterior of the forming machine, even if the as-yet-uncut plastic thread could be defined as a singular coil, it could not conceivably constitute multiple "coils." *See id.* at 7-8.

The claims and specification refute this new assertion. The claim language in both Patents assumes that "hot binding coils" come into existence early in the formation process, prior to their departure from the forming machine. *See* '426 Patent col.14 ll.25-27 (claiming "a coil forming machine for heating, forming *and* cutting discrete segments of hot binding coils") (emphasis added); '502 Patent col.14 ll.14-15 (claiming "a coil forming machine forming hot binding coils"). In addition, the specification states that in "a typical forming machine," after the machine heats the plastic thread and winds it on a mandrel, it "emerges in free air *as a hot spiral coil.*" '426 Patent col.12 ll.63-66 (emphasis added). The coil then "passes through a guillotine cutter which cuts it to size," at which point it emerges from the cutter. *Id.* col.12 ll.66-67 & col.13 ll.1-2. On the face of the Patents, then, it is clear that, contrary to Spiel's contentions, the coils come into existence within the forming machine, before they pass through the guillotine cutter. FN23

FN23. Even if extrinsic evidence is considered, dictionary definitions support the view that the winding of the plastic thread around the mandrel creates a coil or coils. *See* Webster's 223 (defining "coil" as "a series of loops [or] spiral" or "a single loop of such a coil").

ii. Review of Extrinsic Evidence

Spiel urges the Court to consider its extrinsic evidence, which, it asserts, establishes that "everyone in the industry knows that fans are used in all forming machines." Pl. Obj. [# 85] at 8-9. However, the evidence on which Spiel relies is conclusory at best, if not inconclusive.FN24 Furthermore, even if the Court were to consider the testimony and report on which Spiel relies, this weak evidence does not supplant the clear intrinsic evidence, which belies Spiel's contention that some sort of cooling always takes place within the forming machine.

FN24. *See* Transcript of Deposition of Pierre Primeau, dated January 13, 2005 [Pl.Ex. J] [# 68-11], at 172:5-21 ("A: Every machine has a blower. Q: So without a blower, the coil will be unusable? A: Well, the quality will not be there.... I think it's not possible. Never tried it. But every machine has it.... So I cannot figure out how you can form a coil without blower.... Q: So you don't have any proof that without the blower it's an uninsertable [c]oil? A: I can call you tomorrow with the proof. But I haven't tried it right now."); Rebuttal Report by Walter D. Klassen [Pl. Obj. Ex. H] [# 85-9] at 3 ("[P]rior art forming machines ... that are used for coil production all use fan/blower cooling to cool the coil prior to cutting the coil to length. Any coil that is produced using this type of equipment could not reasonably be described as hot upon its discharge from the forming machine.").

C. "First Higher Temperatures"

In its initial *Markman* brief, Spiel argued that "[a]ny rational [] approach to the Spiel patents dictates that 'first higher temperature' ... relates to the temperature of the coil when it leaves the forming machine and begins travel on the patented cooling conveyor." Pl. *Markman* Br. [# 68] at 13. Gateway, in contrast, proposed that "first higher temperature" be construed, in accordance with its proposed construction of "hot binding coils," to mean "a temperature exceeding 190 (deg.)F," as the temperature for forming plastic coil typically exceeds that figure. *See* Gateway Claim Mem. [# 66] at 20.

Because of the different usage of the term in the two Patents, the Special Master recommended that "first higher temperature" be construed, for the '426 Patent, as "the temperature at which the hot binding coils are formed," and, for the '502 Patent, as "the temperature at which the hot binding coils are formed and cut." *See* Report [# 83-1] at 16. He based this distinction on "the ordinary meaning of the words of the claims," which differ slightly in the two Patents. *See id.*; *compare* '502 Patent col.14 ll.14-15 (claiming "a coil forming machine forming hot binding coils at a first higher temperature"), *with* '426 Patent col.14 ll.25-27 (claiming "a coil forming machine for heating, forming *and cutting* discrete segments of hot binding coils at a first higher temperature") (emphasis added); *see also* ACTV, Inc. v. Walt Disney Co., 346 F.3d 1082, 1088 (Fed.Cir.2003) ("[T]he context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms.").

Acknowledging that the language in the two Patents is slightly different, Spiel nonetheless argues, without support, that the phrase should be treated the same way for both Patents. *See* Pl. Obj. [# 85] at 10. The crux of Spiel's objection is that both passages clearly indicate the inventor's intent to "us [e] the phrase 'first higher temperature' to describe the coils as they are cut from the forming machine and begin their time on the patented cooling conveyor." *Id.* at 11.

Spiel rightly notes that the '502 Patent's specification reflects that the coils are still hot when cut to size. *See* '502 Patent col.12 ll.65-67 ("[S]till-hot plastic spiral coils are cut to the length required [by the guillotine cutter]"). Nevertheless, it does not follow that the term "first higher temperature," as used in that Patent, refers exclusively to the point of cutting and not to the point of formation. Indeed, that Spiel made a more detailed claim in the subsequent '426 Patent—claiming "a coil forming machine for heating, forming and cutting discrete segments of hot binding coils at a first higher temperature," '426 Patent col.14 ll.25-27—indicates its awareness of this distinction.FN25 Because Spiel has neither presented any intrinsic evidence that this term carries the same meaning in both Patents, nor cited any relevant case law, its objection to the Special Master's two constructions is without merit.

FN25. In an Amendment filed with the USPTO, Spiel explained why it had modified that claim language. *See* '426 Amendment [Def. Ex. I] [# 67-10] at 13 ("Claim 1 has been amended to be more specific about the 'discrete' hot binding coils, by reciting that the coil forming machine heats, forms and cuts discrete segments of hot binding coils, the segments being of a length required for the book being bound.").

D. "Ambient Air"

In its initial *Markman* brief, Gateway proposed that "ambient air" be construed to mean "non-moving air within a room." Gateway Claim Mem. [# 66] at 11. Spiel opposed this construction, arguing that Gateway

failed to support its association of "ambient air" with the absence of movement. Pl. Rebuttal [# 69] at 5. According to Spiel, " 'ambient' simply describes the surrounding environment." *Id.*

At the *Markman* hearing, both parties concurred with the Special Master's proposed construction of "ambient air" to mean "surrounding air that has not been modified as by forced convection, a compressor or a refrigerant." Tr. [# 83-2] at 87:5-89:15. After re-examining the specification and prosecution history, the Special Master ultimately recommended a construction with slightly different language: "surrounding air that has not been modified, as by a compressor, refrigerant, or a fan." Report [# 83-1] at 18-19. Spiel objects to this formulation, specifically, "the improper inclusion of the word 'fan.' " Pl. Obj. [# 85] at 11.

Both Patents claim a means for carrying the hot binding coils from the forming machine to the binding machine "under conditions in ambient air, said carrying means providing sufficient duration of travel time to provide enough slow cooling time in said ambient air to bring the temperature of said binding coils down to close to room temperature and a solid, non-brittle state." *See* '426 Patent col.14 ll.33-37. As used in the claims, the term "ambient air" appears on its face to refer to surrounding air that has not been subjected to any sort of modification.

The specification, which similarly describes the conveyance of the coils from one machine to the other, supports this construction. It explains that the conveyor takes "some time" to advance, in that it moves forward "intermittently" each time "a segment of coil is cut," causing "a coil in the midsection [to] be significantly cooler by action of ambient air." *Id.* col.13 ll.11-14. While the diagram of the cooling conveyor "shows the movement of coils ... at ambient air temperature," the specification indicates that "other cooling methods known to those skilled in the art may be used to cool coils while coils advance toward receiving conveyor, *such as* by exposure of the coils to pressurized blasts of compressed air, by exposure [of] coils to conventional cooling chambers cooled by freon filled conduits or othe[r] refrigeration means." *Id.* col.13 ll.22-29 (emphasis added). This language in the specification thus indicates that the term "ambient air" was not meant to encompass *any* other cooling process, including, but not limited to, the enumerated methods. The specification thereby supports the Special Master's recommendation that "ambient air" be construed as referring to the unmodified surrounding air in the room, as opposed to air that has been changed in some way, including by the use of a fan, to cool the coils on the conveyor.

The prosecution history similarly distinguishes "ambient air" from prior art that made use of various cooling mechanisms. In May 2003, before the first Patent was granted, Spiel explained to the USPTO that in Pfaffle, "the hot plastic spiral coils are not cooled at ambient air temperature while progressively moving over a conveyor ... [but rather] are cooled by a Vortec cooler with a blast of cold air under rapid cooling." *See* Declaration [Def. Ex. G] [# 67-8] at 8. In the same submission, Spiel also distinguished Primeau, stating that it did not teach cooling under ambient air temperatures, but rather by "insert[ing the coil] in a closed sleeve, to which is applied cool air from a cooling device." *Id.* at 10; *see also* '426 Amendment [Def. Ex. I] [# 67-10] at 13 (distinguishing the Spiel invention as using "ambient air with natural convection," because "forced cooling" increases brittleness); Request for Reexamination [Def. Ex. M] [# 67-14], at 6 ("Through experimentation, Mr. Spiel discovered that if ambient air cooling was employed in place of vortex or chilled air cooling, that the aforementioned brittleness cannot occur.").

Spiel now argues that what it "intended to disclaim from all prior art was refrigerants and artificial cooling systems," and further that it considered Primeau's cooling process to be "closer to" Pfaffle's than the one described in its Patents. *See* Pl. Obj. [# 85] at 10.FN26 However, its subjective intent is of little or no value in determining the scope of a claim. *See Markman*, 52 F.3d at 985. In any event, Primeau does not indicate

that it requires such an artificial cooling system. The Primeau specification mentions only "[a] cooling device [that] continuously cools" the outer sleeve containing the heated plastic coil. *See* Primeau [Def. Ex. L] [# 67-13] col.4 ll.31-32; *see also id.* fig.1 (illustration of fan for cooling outer sleeve). Admittedly, Primeau and Spiel do teach different cooling processes: in the former, the coils are cooled while encased within a stationary sleeve, *see id.* col.6 ll.54-67 & col.7 ll.1-13, whereas the Spiel Patents teach cooling coils exposed to the open air, *see* '426 Patent col.14 ll.23-37. Nevertheless, in amending its Patent application, Spiel distinguished Primeau based not on the enclosing apparatus but based on Primeau's use of "forced convection," as opposed to "ambient air with natural convection." *See* '426 Amendment [Def. Ex. I] [# 67-10] at 13.FN27 In the present context, as confirmed by the language of the '426 Amendment, "forced convection" reasonably can only be read to refer to cooling that takes place through an artificial mechanism or process. *See id.* ("More rapid heat dissipation *as by forced convection (i.e. a fan)* or refrigeration is required in Primeau '156.") (emphasis added). On the other hand, "natural convection" suggests cooling unassisted by an external device, especially when coupled with the words "ambient air." *See also id.* (explaining that ambient air "leaves the coils less brittle[, i]n contrast [to] the *forced cooling* of the references") (emphasis added).

FN26. For the reasons discussed below, this argument is unavailing even assuming *arguendo* that "artificial cooling systems" refers to refrigeration-type cooling systems and does not encompass fans.

FN27. Webster's Dictionary defines "convection" as "the transfer of heat by ... the action or process of conveying." Webster's at 253; *see also* Random House Dictionary of the English Language 319 (1966) (defining "convection" as "the transfer of heat by the circulation or movement of the heated parts of a liquid or gas").

Representations by Spiel to the USPTO in the prosecution of the '502 Patent make a similar distinction. In response to the patent examiner's rejection of some of its original claims as being unpatentable under Pfaffle, Spiel argued that it was not obvious "to substitute ambient cooling ... [with] the forced cooling of Pfaffle." *See* '502 Amendment [Def. Ex. E] [# 67-6] at 10-11. Both Amendments thereby explicitly distinguished Primeau and Pfaffle on the basis of the prior art's reliance on some sort of cooling device (represented in a Primeau diagram as a fan). Accordingly, the Amendments further support the Special Master's construction of "ambient air" as "surrounding air that has not been modified." Report [# 83-1] at 18.

As the intrinsic evidence provides ample support for the Special Master's conclusion, FN28 there appears to be no basis for disturbing his construction of this term or any other term.

FN28. The proper construction of "ambient air" can be ascertained without reference to extrinsic evidence. *See* Hockerson-Halberstadt, 222 F.3d at 955. Even so, dictionary definitions provide further support for the Special Master's construction. *See, e.g.,* OED, *supra* (defining "ambient temperature" as "the temperature of the surrounding environment, esp. as unaltered by direct human intervention") (March 2007 draft addition); Hawley's Condensed Chemical Dictionary 50 (12th ed.1993) (defining "ambient temperature" as "the temperature of the environment in which an experiment is conducted or in which any physical or chemical event occurs"), *cited in* Doyle v. Crain Indus., No. 00-1103, 243 F.3d 564 (table), 2000 WL 1608826, at (Fed.Cir. Oct.25, 2000).

CONCLUSION

For the foregoing reasons, this Court recommends that the Special Master's Report be adopted in its entirety, over Spiel's objections.

Any objection to the recommendations contained herein must be filed with the Honorable Frederic Block by July 7, 2007. Failure to file objections in a timely manner may waive a right to appeal the District Court order. *See* 28 U.S.C. s. 636(b)(1); Fed.R.Civ.P. 6(a), 6(e), 72; *Small v. Sec'y of Health & Human Servs.*, 892 F.2d 15, 16 (2d Cir.1989).

The Clerk is directed to docket this Report and Recommendation through the Electronic Case Filing System.

SO ORDERED.

REPORT OF LAWRENCE B. GOODWIN, PURSUANT TO FED. R. CIV. P. 53, REGARDING CONSTRUCTION OF U.S. PATENTS 6,547,502 AND 6,726,426

LAWRENCE B. GOODWIN, Special Master.

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I. Introduction

This is the report of Lawrence B. Goodwin, appointed Special Master in this matter pursuant to Fed.R.Civ.P. 53, for the purpose of the construction of the relevant claims of plaintiff Spiel Associates' patent Nos. 6,547,502 (the "'502 patent") and 6,726,426 (the "'426 patent") (collectively, the "Spiel patents" or the "patents-in-suit").

The following materials have been provided by the parties, and have been reviewed and considered in the preparation of this report:

The '502 and '426 patents,

Plaintiff's Initial Markman Brief on Claim Construction and the exhibits thereto (Docket No. 68),

Gateway's Memorandum Regarding Claim Construction of U.S. Patent Nos. 6,547,502 and 6,726,426 (Docket No. 66) and the exhibits thereto (Docket No. 67),

Plaintiff's Rebuttal Markman Brief on Claim Construction and exhibits thereto (Docket No. 69), and

Gateway's Responsive Memorandum Regarding Claim Construction of U.S. Patent Nos. 6,547,501 and 6,726,426 (Docket No. 70).

Portions of the prosecution histories of the Spiel patents were included in the exhibits to the memoranda of record, above. The exhibits also included the parties' contentions as to infringement and validity, and extrinsic evidence, such as deposition testimony, product brochures, and expert reports.

A Markman hearing was conducted at the undersigned's offices at 1633 Broadway, New York, New York, on September 19, 2006. During the hearing, the parties were given the opportunity to discuss and argue the construction of the relevant claim terms at issue. No live testimony was presented. The hearing was transcribed, and the transcript is made of record in this matter.

All of the aforementioned memoranda, including all of the exhibits thereto, and the parties' arguments presented at the Markman hearing itself, have been fully reviewed in detail and considered, and constitute the record upon which this report is based.

In addition to the evidence referred to above, extrinsic evidence was proffered by both parties during the Markman hearing. This additional extrinsic evidence was not made of record, however, because (1) it appeared to be of limited probative value, and (2) neither side had a fair opportunity to study and comment upon the other party's evidence, which had not been proffered by either party prior to the hearing.

At the request of Gateway, the parties and the undersigned inspected, on September 18, 2006, the Gateway "Interline" Coil Forming and Binding System, which has been accused of infringement in this case. The inspection of the system was not done to assist in the construction of the claims terms, and has not been used for such purpose, but instead has been used to help provide context and identify claim construction issues that are of particular interest in this case. *See* *Wilson Sporting Goods Co. v. Hillerich & Bradshy Co.*, 442 F.3d 1322, 1331 (Fed.Cir.2006) (nothing forbids "awareness of the accused product or process to supply the parameters and scope of the infringement analysis, including its claim construction component"); *Lava Trading, Inc. v. Sonic Trading Mgmt., LLC*, 445 F.3d 1348, 1350 (Fed.Cir.2006) ("Without knowledge of the accused products, this Court ... lacks a proper context for an accurate claim construction."); *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 1580 (Fed.Cir.1991) ("Of course the particular accused product (or process) is kept in mind, for it is efficient to focus on the construction of only the disputed elements or limitations of the claims.").

In several instances, this report will address certain evidence and/or arguments presented by the parties in briefs or at the hearing. It should be understood, however, that *all* of the parties' submissions and arguments have been fully considered.

II. Claim Construction In General

Claims must be construed as a matter of law by the court. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed.Cir.1993) (en banc), *aff'd*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). The law governing the construction of patent claim terms is comprehensively addressed in *Phillips v. AWE Corp.*, 415 F.3d 1303 (Fed.Cir.2005) (en banc). The words of the claims "are generally given their ordinary and customary meaning," which is "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention ..." *Id.* at 1312-13 (citations omitted). The person of ordinary skill in the art is deemed to have read the claim in the context of the entire patent, including the specification and the prosecution history. *Id.* at 1313-14. This "intrinsic" evidence-the patent claims, specification, and the prosecution history-usually provides the technological and temporal context to enable the court to ascertain the meaning of the claim to one of ordinary skill in the art at the time of the invention. *Id.* at 1313 (quoting *V-Formation, Inc. v. Benetton Group SpA*, 401 F.3d 1307, 1310 (Fed.Cir.2005)).

Extrinsic evidence, such as expert and inventor testimony, dictionaries and treatises, may also be useful in construing claims, to the extent such evidence may illuminate the underlying technology of the patent and the meaning of certain terms to those of ordinary skill in the art. *Phillips*, 415 F.3d at 1317-18.

The Federal Circuit in *Phillips* discussed the relative importance of each of the above sources. It recognized the words of the claims themselves as the first principles from which the claims must be construed. *Id.* at 1314. The claims, however, "must be read in view of the specification, of which they are a part." *Id.* at

1315 (quoting Markman, 52 F.3d at 979). The Federal Circuit concluded that the specification is the "primary basis for construing the claims." Phillips, 415 F.3d at 1315 (quoting Standard Oil Co. v. Am. Cyanamid Co., 774 F.2d 448, 452 (Fed.Cir.1985)).

Although the specification is "the best source for understanding a technical term," the construction may be "informed, as needed, by the prosecution history." Philips, 415 F.3d at 1315 (quoting Multiform Desiccants, Inc. v. Medzam, Ltd., 133 F.3d 1473, 1478 (Fed.Cir.1998)). The cases recognize that the "specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess," or "an intentional disclaimer or disavowal, of claim scope by the inventor." Phillips, 415 F.3d at 1316. Similarly, "the prosecution history provides evidence of how the PTO and the inventor understood the patent." *Id.* at 1317. Although the prosecution history "often lacks the clarity of the specification," it "can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Id.*

In the present case, the prosecution history is of significant assistance in the construction of several claim terms, as will be discussed.

Extrinsic evidence may also be used by "the district court in its sound discretion" to help construe the claims. *Id.* at 1319. It is, however, "less reliable" than the intrinsic evidence as a construction aid. *Id.* at 1318. Dictionaries, treatises and expert and inventor testimony may be considered, but will not control where such evidence is at odds with the intrinsic evidence. *Id.* at 1318-19, 1322-23, 1324.

In construing claims, the court often has the difficult task to give meaning to the claim terms from the specification, without needlessly importing limitations into the claim terms from that source. This can best be achieved by focusing on "how a person of ordinary skill in the art would understand the claim terms." *Id.* at 1323. The manner in which the patentee uses a term within the specification will usually make it clear whether the patentee is merely setting out specific examples in the specification, or "whether the patentee instead intends for the claims and the embodiments in the specification to be strictly coextensive." *Id.*

The analysis and conclusions in this report are based upon the foregoing legal principles.

III. The '502 and '426 Patents

The '502 and '426 patents are for a "Combination Plastic Spiral Forming Machine and Semi-Automatic Plastic Spiral Binding Machine." The patents share an identical disclosure, the '426 patent being a continuation of the '502 patent.

Although much of the specification and drawings is directed to details of the binding machine, the claimed invention is for a combination of a plastic spiral forming machine and a plastic spiral binding machine. A typical spiral forming machine 510 is shown in Figures 22, 24, and 25. Figure 22 is shown below.

Tabular or graphic material set at this point is not displayable.

The spiral forming machine takes a plastic thread 505 from spool 501, preheats it in chamber 511 and then winds it on a mandrel 512 where it emerges in free air as a spiral coil 513. It passes through guillotine cutter 514, which cuts it to size. '502 patent, col. 12, lines 56-60. FN1 The spiral coils are used to bind books in

the spiral binding machines 1 shown in Figures 1, 2, 14, 22, 24 and 25.

FN1. Unless otherwise indicated, references to the specification of the Spiel patents will be to the column and line numbers of the '502 patent.

As noted, the claims are directed to the combination of the coil forming and binding machines. As explained in the specification, if the coil forming and binding operations are performed independently, storage of coils is required, and waste of coils will occur if the coils are not of optimal size. Col. 12, lines 45-49. By combining the machines, these drawbacks are eliminated. *Id.*

A prior art integrated coil forming and binding machine, disclosed in U.S. Patent 4,249,278 to Pfaffle, is discussed in the '502 patent at col. 1, lines 34-53, and col. 12, lines 22-40. As described in the '502 patent, Pfaffle, which is represented in Figure 21 of the '502 patent, forms the spiral coil, *rapidly cools it in the forming machine*, and then uses it to bind a book. Pfaffle involves

pulling plastic thread 505 from spool 501, preheating it, winding around a mandrel in a heated zone 502, continuously feeding this hot coil into a cooling sleeve 503 for rapid cooling using a blast of cold air generated by a vortex cooler and then feeding the resulting spiral into the binding machine 504.

Id., col. 12, lines 27-32.

The '502 patent further explains that this approach has drawbacks:

The plastic coil material of polyvinyl-chloride (PVC) gets embrittled by the rapid cooling. It develops voids largely manifested as a hollow core in its interior crosssection. The resulting material is too brittle to process in binding machine 504, as the ends are frequently broken off during the bending [*sic*, binding] process or in early use of the bound books by the consumer.

Id. lines 34-40.

The invention of the Spiel patents avoids this rapid cooling, in an integrated system, by slowly cooling the coils, prior to binding, during the conveying of the coils to the binding machine. As explained in the Spiel patents, a "linkage conveyor" 525, Figure 22, is placed between the coil forming machine 510 and the binding machine 1. *See* col. 12, lines 43-45. In operation, the coil forming machine 510 heats plastic thread in chamber 511, winds it on the mandrel 512, "where it emerges in free air as a hot spiral coil 513." *Id.*, lines 56-59. The coils are cut to length (*id.*, col. 12, lines 59-60) and the "hot, but rigid, plastic spiral coil 515 emerges from the cutter." *Id.*, col. 12, lines 61-62. Each of the hot coils falls

into a narrow compartment formed by adjacent vanes 527 attached to a conveyor belt 526. Cooling conveyor 525 moves intermittently to index to the next empty compartment every time a segment of coil 515 is cut. As it takes some time for the cooling conveyor 525 to advance, a coil 515 in the midsection 516 would be significantly cooler by action of ambient air. Further movement in ambient air temperature near the end of travel further cools coil 517. At the end of travel, coils 518 drop into the receiving conveyor 300 (or input through [*sic*, trough]) of binding machine 1 at a temperature (close to room temperature) which is ideal for processing. There is no material embrittlement since slow cooling using ambient air is used.

Id., col. 13, lines 1-13. Thus, the Spiel patents differ from the prior art Pfaffle patent because they do not cool the coils rapidly while they are still inside the coil forming machine. Instead, the coils are cooled slowly, by ambient air, as they are conveyed from the coil forming machine to the binding machine. The specification states that the coils may be cooled by additional methods, such as by pressurized blasts of compressed air, cooling chambers or refrigeration means, while the coils are advanced along the conveyor 525. Id., col. 13, lines 14-21.

The specification explains that the length "L" of the conveyor (Figure 23, reproduced below) is selected (presumably in conjunction with the range of speeds of the conveyor) "to provide enough cooling time ... to adequately cool in the highest design temperature ambient air environment." Id., col. 13, lines 35-38.

Tabular or graphic material set at this point is not displayable.

The claims at issue in this case, according to Spiel's "Initial Infringement Claim Charts" (Ex. C to Plaintiffs' Initial Markman Brief on Claim Construction (Docket No. 68)), are claims 1 and 3-7 of the '502 patent, and claims 1-3, 6 and 7 of the '426 patent. Collectively, the parties have identified 20 disputed claim terms. *See* Exhibit S to Gateway's Memorandum, Docket No. 67, and the Table of Contents of Plaintiffs Brief, Docket No. 69. For the most part, Spiel's disputed terms (with the exception of "sufficient duration of travel time") are a subset of Gateway's. Accordingly, the disputed terms set forth in Gateway's Ex. S will be construed herein, along with "sufficient duration of travel time."

For context, the contested claims are reproduced below, with the disputed terms in bold type:

The '502 Patent

1. A combination plastic spiral coil forming and binding machine comprising:
a coil forming machine forming **hot binding coils** at a **first higher temperature**;

a binding machine for binding said **cooled coils** into holes of a book being bound; and

a **conveyor** for **carrying** said binding coils from said coil forming machine to said binding machine under **ambient air** conditions, the **length of said conveyor** being **selected** to provide enough **slow cooling time** to bring the temperature of said binding coils down to **close to room temperature** and a **solid, non-brittle** state.

3. The combination plastic spiral coil forming and binding machine as in claim 1 wherein said binding machine interacts with said plastic spiral forming machine at compatible speeds to each other, said **coil forming machine** having a means for taking plastic thread from a spool, a heating chamber for preheating said plastic thread, an advancement means advancing and then winding said plastic thread on a mandrel, a discharge element discharging said heated plastic thread in free air as a **hot spiral coil**, a cutter cutting said **hot spiral coil** being cut to a predetermined size as a hot coil, said hot coil being transferred to said **linkage cooling conveyor**, said linkage cooling conveyor moving said coil intermittently.

4. The combination plastic spiral coil forming and binding machine as in claim 1 further comprising a drive motor moving said **linkage cooling conveyor**.

5. The combination plastic spiral coil forming and binding machine as in claim 4 wherein said drive motor is

a DC direct current gearmotor.

6. The combination plastic spiral coil forming and binding machine as in claim 4 wherein said drive motor is an AC alternating current gearmotor.

7. The combination plastic spiral coil forming and binding machine as in claim 4 wherein said drive motor is a stepping motor.

The '426 Patent

1. A combination in line plastic spiral coil forming and binding machine comprising:
a coil forming machine for heating, forming and cutting discrete segments of **hot binding coils** at a **first higher temperature**, said discrete segments being of a length required for a particular book being bound;

a binding machine for binding said discrete segments into holes of the book being bound; and

means for carrying said segments of **hot binding coils** from said **coil forming machine** to said binding machine under conditions in **ambient air**, said **carrying means** providing **sufficient duration of travel time** to provide enough **slow cooling time** in said **ambient air** to bring the temperature of said binding coils down to **close to room temperature** and a **solid, non-brittle** state.

2. The combination of claim 1 in which said **carrying means** is a **conveyor**.

3. The combination of claim 2 in which said **carrying means** relies on natural convection to cool said segments of binding coils.

6. A combination in line plastic spiral coil forming and binding machine comprising:

a coil forming machine for heating, forming and cutting discrete segments of **hot binding coils** at a **first higher temperature**, said discrete segments being of a length required for a particular book being bound;

a binding machine for binding said discrete segments into holes of the book being bound;

a **means for carrying** said segments of **hot binding coils** from said **coil forming machine** to said binding machine; and

said **carrying means** cooling said segments of **hot binding coils** on said **carrying means** to bring the temperature of said binding coils down to **about room temperature** at a **rate of cooling** to produce a **solid, non-brittle** state of said binding coils under conditions in **ambient air**, said **carrying means** providing **sufficient duration of travel time** to provide enough **slow cooling time** in said **ambient air** to bring the temperature of said binding coils down to **close to room temperature** and said **solid, non-brittle** state.

7. The method of binding a book having openings for binding comprising the steps of:

heating, forming and subsequently cutting discrete segments of **hot binding coils** at a **first higher temperature**, said discrete segments being of a length required for a particular book being bound;

conveying said segments of **hot binding coils** on a **conveyor** to a book binding machine;

cooling said **hot binding coils** while being **conveyed** on said **conveyor** to said book binding machine, to bring the temperature of said binding coils down to **about room temperature** at a **rate of cooling** to produce a **solid, non-brittle** state of said binding coils; and

binding said book in said binding machine.

IV. Claim Construction

The following sets forth the recommendations as to the construction of these terms. The terms will be construed generally in the order in which they appear in claims.

A. Coil Forming Machine

The term "coil forming machine" is used in '502 patent claims 1 and 3, and in '426 patent claims 1 and 6. Its construction requires no more than the application of the ordinary meanings of the words themselves. The parties in fact have agreed that the coil forming machine should be construed as *a machine that forms coils*. Markman Hearing transcript ("Hearing Tr."), at 115-116.

B. Hot Binding Coils

The term "hot binding coils" (or "hot *spiral* coil") is used in the '502 patent, claims 1 and 3 and in the '426 patent, claims 1, 6 and 7. Based upon the ordinary meanings of the words of the claims themselves, the specification, and a clear prosecution history, "hot binding (or spiral) coils" should be construed to mean *coils formed in the conforming machine prior to cooling*.

The patents in suit describe apparatus in which the only cooling that takes place is along the conveyor, between the coil forming machine and the binding machine. As explained in the specification, the "typical coil forming machine 510 takes plastic thread 505 from spool 501, preheats it in chamber 511 and then winds in on a mandrel 512 where it emerges in free air as a hot spiral coil 513." Col. 12, lines 56-59. The specification contrasts the invention with forming machines that cool the coils within the coil forming machine. In fact, Figure 21 of the Spiel patents is a depiction of the prior art described in Pfaffle U.S. patent 4,429,278 in which the coil is rapidly cooled within the forming machine. As the Pfaffle patent is described in the Spiel patents, the hot coil is fed "into a cooling sleeve 503 for rapid cooling using a blast of cold air generated by a vortex cooler" and the cooled coil is fed into the binding machine 504. Col. 12, lines 29-32.

According to the Spiel patents, this rapid cooling causes problems:

Unfortunately, this tightly coupled process has a drawback. The plastic coil material of polyvinyl-chloride (PVC) gets embrittled by the rapid cooling. It develops voids largely manifested as a hollow core in its interior cross-section. The resulting material is too brittle to process in binding machine 504, as the ends are frequently broken off during the bending [*sic*, binding] process or in early use of the bound books by the consumer.

Id., lines 33-40

As explained at col. 12, lines 41-52, the invention disclosed in the Spiel patents avoids this problem by

slowly cooling the coils between the forming machine and the binding machine. Specifically, the processes of forming plastic coils and using them to bind books are integrated using the linkage conveyor 525 of Figure 22, and is "accomplished in such a manner as to permit *slow cooling of the spirals between the manufacturing step and the use step* in a binding machine." Col. 12, lines 50-52 (emphasis added).

This distinction between the claimed invention and the prior art was reinforced during the prosecution of the '426 patent, where Spiel made it clear that "hot coils" were coils that had been formed but not yet cooled:

Pfaffle '278 discloses the spiral binding of sheet groups with plastic thread. As the Examiner states, this reference has a coil forming machine at high temperature, followed by cooling down the "hot coils", to use the Examiner's expression, and a binding machine. Actually, the plastic thread 33 is fed to a mandrel 24 on which the thread is heated to form the spiral coil. As the mandrel rotates and the spiral coil passes through a cooling zone, such as a Vortec machine, the coil is fed into the perforated sheet group 77 and then cut "after it has passed through the perforations 79" (col. 3, lines 49-58). *Thus there is no cooling down of "hot coils"*. The spiral coil is cut after cooling. *In the present invention, as recited in claim 1, the spiral coil is cut into segments prior to cooling.*

Amendment of December 1, 2003, (Docket No. 67, Ex. I) p. 12 of 17 (emphasis added). FN2 Similar assertions were made during the prosecution of the '426 patent concerning Primeau U.S. patent 6,190,156, which cooled the coil in the forming machine with a fan 50, Fig. 2. *See* Amendment of November 26, 2003, (Docket No. 67, Ex. I), pp. 13-14 of 17. According to Spiel, the prior art, as exemplified by the prior art Pfaffle patent, which cut the formed coils after cooling, did not teach cutting "hot coils":

FN2. The prosecution of the '426 patent is relevant to construction of the claims in the '502 patent, and *vice versa*. *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1353 (Fed.Cir.2005); *Jonsson v. The Stanley Works*, 903 F.2d 812, 818 (Fed.Cir.1990).

A new independent claim 26 ['426 patent claim 6] has been added emphasizing the feature of cutting the coil into segments before cooling and providing for cooling of the segments on said conveyor while on the way from the coil forming machine to the binding machine. *The cutting of the hot coil into segments prior to cooling is not found in the art of record*, as already noted.

Id., p. 14. *See also* the statement of reasons for allowance, February 12, 2004, from the prosecution of the '426 patent (Docket No. 67, Ex. J), at pages 6 and 7 of 9.

Thus, the term "hot binding coils" should be defined by the ordinary meanings of the words of the claim, the specification and prosecution history as coils that have been formed in the forming machine prior to cooling.

The undersigned is aware of, and has considered, Spiel's contention, set forth primarily at pages 13-16 of its Initial Markman Brief (Docket No. 68), that coils can still be "hot" even if they have been cooled to some extent in the forming machine. Spiel relies on two things to support this notion. First, according to Spiel, the passage in the specification that refers to the "still hot" coils leaving the forming machine means that "hot coils" are defined as the coils leaving the machine-even if they were previously cooled. This is contrary to the specification and prosecution history, as discussed above, and it is a *non-sequitur*, since the coils exiting the machine can be described as "still hot" *because* they have not yet been cooled.

Second, according to Spiel, the coil forming machine described in the Spiel patents must use cooling within

the forming machine, to set its helical shape. *See id.* at 14. Putting aside issues of enablement and/or operability, which are beyond the scope of this report, Spiel's contention that the forming machine of the Spiel patents includes a "small fan" (*id.*) is not supported by the disclosure, and in fact, the invention was distinguished from the prior art because the Spiel invention, unlike the prior art Pfaffle and Primeau patents, *did not cool the coils within the forming machine*, as discussed above. It is noted that while Pfaffle uses a vortex cooler, Primeau explicitly shows a fan 50 within the forming machine—the very same expedient now asserted to be inherently disclosed in the Spiel patents.

Spiel asserts, without support, that "everyone in the industry" knows that fans are used "in all forming machines," (Plaintiffs Initial Markman Brief (Docket No. 68), p. 14) yet patentability was based, at least in part, on the assumption that no cooling takes place in the forming machine, as discussed above. Spiel further asserts that Figures 22, 24 and 25 of the Spiel patents are schematics that depict the forming machine in "broad strokes," and that the PTO examiner did not need to be educated as to the details of the forming machine. *Id.*, pp. 15-16. It is noted, however, that the level of detail of the forming machine set forth in the Spiel patents (which included reference to spool 501, plastic thread 505, pre-heating chamber 511, mandrel 512 and guillotine cutter 514 in Figure 22, for example) would certainly have admitted the simple reference to a cooling fan, particularly since the invention was directed to solving prior art problems associated with the cooling of coils.

Accordingly, the term "hot binding coils" should be interpreted as set forth above.

C. First Higher Temperature

The term "first higher temperature," which is used in claim 1 of the '502 patent and in claims 1, 6 and 7 of the '426 patent, should be construed as *the temperature at which the hot binding coils are formed*, in the case of '502 patent claim 1, and *the temperature at which the hot binding coils are formed and cut*, in the case of the '426 patent, claims 1, 6 and 7.

The basis for this construction is the ordinary meaning of the words of the claims. In claim 1 of the '502 patent, it is clear that the hot binding coils are formed at "a first higher temperature," and in claims 1, 6 and 7 of the '426 patent, it is clear that the hot binding coils are formed *and cut* at "a first higher temperature." This term is construed slightly differently in the claims of the '502 and '426 patents because it is used slightly differently in the claims. *See Phillips*, 415 F.3d at 1314 ("Quite apart from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claim terms."); *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed.Cir.2003) ("the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms").

D. Conveyor

The term "conveyor," which is used in claim 1 of the '502 patent, and in claims 2 and 7 of the '426 patent, should be construed, for purposes of the present case, as *a device that includes a moving surface for transporting articles, as opposed to a chute or a slide*.

This construction is based on the specification and prosecution history of the Spiel patents, and is confirmed by dictionary definitions and case law precedent. In the specification, the "conveyor" 525 in Figures 22-25, which includes, among other things, a moving surface, was distinguished, at least in name, from the "chute" 8 in Figures 1 and 2, which does not have a moving surface. *See col. 7*, lines 5 and 23. During the

prosecution of the '426 patent, Spiel submitted a declaration dated May 14, 2003 (Docket No. 67, Ex. G) that discussed the exhibition of "the first in-line plastic coil system" at a trade show in Chicago on October 17-20, 1999. *Id.*, p. 3 of 11. The exhibited machine was described as follows: "There was no exit conveyor on the forming machine. Due to time constraints, a chute made from paper and cardboard was quickly designed and mounted with tape onto the end of the forming machine." *Id.* (emphasis added). Again, the term "conveyor" was distinguished from a "chute," the latter of which does not have a moving surface.

Further, the notion that a "conveyor" has at least a moving surface is confirmed by dictionary definitions, e.g., the Merriam-Webster Collegiate Dictionary (2000), which defines "conveyor" as "a mechanical apparatus for moving articles or bulk material from place to place (as by an endless moving belt or chain of receptacles)," and in *Lantech, Inc. v. Keip Mach. Co.*, 32 F.3d 542, 547 (Fed.Cir.1994), the Federal Circuit criticized the district court for defining "conveyor" as embracing only a conveying or moving surface, commenting that it further included "components such as belts, slider plates, and drives, in addition to a moving surface." FN3 It is noted that *Lantech* dealt with a different patent, prosecution history and the like, but it, and the dictionary definition, confirm the construction based upon the intrinsic evidence, as discussed above.

FN3. For purposes of this present case, it is sufficient to construe "conveyor" as having at least a moving surface without regard to whether it also includes such additional items.

Spiel's construction of "conveyor"-"an item that transports something from Point A to Point B" (Plaintiff's Initial Markman Brief (Docket No. 68) at p. 9)-is overly broad. It would encompass, for example, a truck.

E. Carrying

The term "carrying," which is used in claim 1 of the '502 patent and claims 1 and 6 of the '426 patent, does not require construction. It has its ordinary, common meaning as used in the claims.

F. Ambient Air

The term "ambient air" is used in claim 1 of the '502 patent and claims 1 and 6 of the '426 patent. It should be construed as ***surrounding air that has not been modified, as by a compressor, refrigerant or a fan.*** This construction is based upon the specification and the prosecution history.

The specification, at col. 13, lines 14-21, explains that "ambient air" is used to cool the coils while on the conveyor, but *other* cooling methods may be used, such as pressurized blasts of compressed air, conventional cooling chambers or refrigeration means. The specification thus distinguishes "ambient air" from such expedients, and ambient air therefore cannot be construed to mean "compressed" or "refrigerated air".

"Ambient air" was also distinguished from the prior art during the prosecution of the '426 patent. In an Information Disclosure Statement dated May 20, 2003, "ambient air temperature" was distinguished from the Pfaffle '278 prior art reference, which disclosed cooling of coils "by a Vortec cooler with a blast of cold air" (Docket No. 67, Ex. G, p. 8 of 11), and from the Primeau '156 prior art reference, which disclosed the use of a cooling device 50, which is schematically represented as a fan. *See id.*, p. 10 of 11; *see also* Amendment of November 26, 2003 (Ex. I), p. 13 of 17. Thus, in addition to compressed or refrigerated air, "ambient air" was also distinguished from the forced convection-by fan 50-disclosed in Primeau, and should

be construed as noted above.

G. Length of the Conveyor

The term "length of the conveyor", which is used in the '502 patent claim 1, does not require construction, other than to note that it means the ***length of the conveyor in the direction of travel***. This length is shown as dimension "L" in the example shown in Figure 23.

Spiel contends that the term "length of the conveyor" implies a length of time, *i.e.*, "long enough to serve the inventor's purpose" Plaintiff's Initial Markman Brief (Docket No. 68) at p. 22. This ignores the plain claim language, which speaks of the length of the *conveyor*, not a length of *time*.

H. Selected

The term "selected," which is used in claim 1 of the '502 patent, does not need to be construed beyond its ordinary meaning.

I. Slow Cooling/Slow Cooling Time

The term "slow cooling," which is used in claim 1 of the '502 patent, and in claims 1 and 6 of the '426 patent, means ***a rate of cooling that allows coils to cool without becoming brittle***. This is based upon the specification. As explained, rapid cooling can result in the coils becoming brittle. Col. 1, lines 47-50; col. 12, lines 34-35. Thus, the coil forming and binding processes must be integrated "in such a manner as to permit *slow cooling* of the spirals between the manufacturing step and the use step in a binding machine." *Id.*, col. 12, lines 49-52 (emphasis added).

Based upon the ordinary meaning of the claim language, the "slow cooling *time*" recited in the claims is simply ***the amount of time during which the coils are exposed to slow cooling***.

Gateway argues that this term, and several others, are indefinite and cannot be construed. A claim is indefinite if, when read in light of the specification, it does not "reasonably apprise those skilled in the art both of the utilization and scope of the invention." *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 624 (Fed.Cir.1985) (quoting *Georgia-Pac. Corp. v. U.S. Plywood Corp.*, 258 F.2d 124, 126 (2d Cir.1958)). However, if a claim term is "subject to construction, *i.e.*, it is not insolubly ambiguous, it is not invalid for indefiniteness." *Bancorp Servs. L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1371 (Fed.Cir.2004). Because the terms "slow cooling" and "slow cooling time" can reasonably be construed, as above, they are not indefinite.

J. About, or Close to Room Temperature

The term "close to room temperature" in claim 1 of the '502 patent and in claims 1 and 6 of the '426 patent, and the term "about room temperature" in claims 6 and 7 of the '426 patent, are construed to mean ***a temperature of approximately 68 to 77 (deg.) F***. This is based primarily on dictionary definitions and case law precedent.

The specification of the Spiel patents does not explicitly define "room temperature." The concept of "room temperature" is well-known, however, and defined in various sources. For example, the American Heritage Dictionary of the English Language defines "room temperature" as: "An indoor temperature of from 20 to

25 (deg.)C (68 to 77 (deg.)F)." The American Heritage Dictionary of the English Language 1513 (4th ed.2000). In this situation, this dictionary definition is an appropriate source of guidance for claim construction. This specific term has also been construed in other matters. *See, e.g.,* Ahlstrom Mack, Inc. v. Clement, 13 F.Supp.2d 45, 47-48 (D.D.C.1998) (relied on a dictionary definition to construe "room temperature" to mean 68 to 77 (deg.) F in the absence of any guidance from the intrinsic evidence), *aff'd*, Kamy, Inc. v. Clement, 217 F.3d 860 (Fed.Cir.1999).

In addition, the specification of the Spiel patents does not indicate that the patentee intended to use the terms "close to" and "about" to mean something other than in the ordinary sense of "approximately." Accordingly, the terms "close to room temperature" and "about room temperature" should be construed to mean a temperature of approximately 68 to 77 (deg.) F.

Gateway argues that these terms are indefinite and cannot be construed. As noted, the term "room temperature" is susceptible of construction, and accordingly, is not indefinite. Moreover, the additional language-"about" or "close to"-is commonly used in patent claims and have been accepted in patent examination and upheld by the courts. *See, e.g.,* Merck & Co., Inc. v. Teva Pharms. USA, Inc., 395 F.3d 1364, 1369-70 (Fed.Cir.2005) (construing the term "about" to mean approximately); Andrew Corp. v. Gabriel Elecs., Inc., 847 F.2d 819, 821-22 (Fed.Cir.1988) (discussing term "close to").

K. Solid

The term "solid," which is used in claim 1 of the '502 patent, and in claims 1, 6 and 7 of the '426 patent, should be construed to mean ***the state of a coil that has been cooled such that it maintains its shape during binding.***

Apart from the claims, the word "solid" is used only once in the specification, at col. 2, line 10. There, it uses the words "solid" and "flexible" to describe a coil that can be used to bind a book. The construction of the term is illuminated by the prosecution history. In the Request for Reexamination of the '502 patent (Docket No. 67, Ex. M) at p. 6 of 13, it was noted that in the prior art, coils might "not be cooled enough, thereby leaving them in a malleable, *non-solid* state in which the coils would be deformed by the binding machine ..." (emphasis added). Thus, the reasonable construction of the term "solid" is as stated above.

L. Non-Brittle

"Non-brittle", which is used in claim 1 of the '502 patent and in claims 1, 6 and 7 of the '426 patent, should be construed to mean ***the condition of a coil that allows it to be used without its ends being broken off during binding or early use***, based primarily upon the way the term is used in the specification. As set forth at col. 1, lines 50-53, a coil that is too brittle would have its ends "broken off during the bending [*sic*, binding] process or in early use of the bound books by the ultimate consumer." Thus, a "non-brittle" coil is one that can be used for binding, without its ends being broken off.

Gateway asserts that this term is indefinite. Because it is not insolubly ambiguous, however, it is not indefinite.

M. Linkage Cooling Conveyor

The term "linkage cooling conveyor," which is used in claim 3 of the '502 patent, is used to denote the apparatus 525 shown in Figures 22-25 of the patents in suit and described in the corresponding portions of

the specification. *See* col. 6, lines 9-19; col. 12, line 41-col. 13, line 38. Accordingly, it should be construed as *a conveyor having or made from a plurality of links pivotally attached to one another*.

N. Means for Carrying/Carrying Means

The term "means for carrying," (alternatively, "carrying means") is used in claims 1 and 6 of the '426 of that patent. At the Markman Hearing, the parties agreed (Hearing Tr. at 24) that this must be construed under 35 USC s. 112, para. 6, which states that:

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.

Here, the specified function is carrying the hot binding coils from the forming machine to the binding machine. Accordingly, this claim term covers the structure disclosed in the specification for carrying out that function, and equivalents. The parties have further agreed that this structure is shown as conveyor 525 in Figures 22 and 23 of the Spiel patents. Hearing Tr. at 25-26. The "means for carrying" therefore should be construed to mean *the structure 525 of Figures 22 and 23, and equivalents thereof*.

O. Travel Time

The term "travel time" is used in claims 1 and 6 of the '426 patent. It does not require construction, other than to note that the ordinary meaning of the term is *the amount of time something takes to travel*.

P. Sufficient Duration of Travel Time

The term "sufficient duration of travel time" is used in claims 1 and 6 of the '426 patent. It does not require further construction. The claims require that the travel time be of a duration sufficient to allow the coils to cool slowly.

Q. Rate of Cooling

The term "rate of cooling" is used in claims 6 and 7 of the '426 patent. It does not require construction, other than to note that the ordinary meaning of the term is *the rate at which something is cooled*. The parties agreed with this construction, although Gateway reserved the right to assert that the term is indefinite. Hearing Tr. at 131-132. Since it is reasonably subject to construction, and not insolubly ambiguous, it is not indefinite.

R. Convey

The term "convey" (or "conveyed" or "conveying") is used in claim 7 of the '426 patent. It does not require construction other than to note that the ordinary meaning of "convey" is *to move*.

S. Cooled Coils

The term "cooled coils" is used in claim 1 of the '502 patent. It is not used elsewhere in the specification, but it can be construed by the words of the claim itself. It is clear from the claim that the "cooled coils" are

used in the binding machine, and that the coils are cooled down to "close to room temperature" during the conveyance of the coils to the binding machine. Thus, the "cooled coils" should be construed to mean *coils that have been cooled down to close to room temperature*.

Strictly speaking, as Gateway points out, the term "said cooled coils" lacks antecedent basis, but because it is reasonably subject to construction, and not insolubly ambiguous, it is not indefinite.

V. Conclusion

In conclusion, upon a full review of the record, it is recommended that the following terms, in alphabetical order, be construed as follows:

- 1) About Room Temperature- *a temperature of approximately 68 to 77 (deg.) F*
- 2) Ambient Air- *surrounding air that has not been modified, as by a compressor, refrigerant or a fan*
- 3) Carrying-ordinary meaning
- 4) Close to Room Temperature- *a temperature of approximately 68 to 77 (deg.) F*
- 5) Coil Forming Machine- *a machine that forms coils*
- 6) Convey- *to move*
- 7) Conveyor- *a device that includes a moving surface for transporting articles, as opposed to a chute or a slide*
- 8) Cooled Coils- *coils that have been cooled down to close to room temperature*
- 9) First Higher Temperature-(⁵⁰² patent, claim 1): *the temperature at which the hot binding coils are formed*; (⁴²⁶ patent, claims 1, 6 and 7): *the temperature at which the hot binding coils are formed and cut*
- 10) Hot Binding Coils, or Hot Spiral Coil- *coils formed in the conforming machine prior to cooling*
- 11) Length of the Conveyor- *length of the conveyor in the direction of travel*
- 12) Linkage Cooling Conveyor- *a conveyor having or made from a plurality of links pivotally attached to one another*
- 13) Means for Carrying/Carrying Means- *the structure 525 of Figures 22 and 23, and equivalents thereof*
- 14) Non-Brittle- *the condition of a coil that allows it to be used without its ends being broken off, during binding or early use*
- 15) Rate of Cooling- *the rate at which something is cooled*

16) Selected-ordinary meaning

17) Slow Cooling- *a rate of cooling that allows coils to cool without becoming brittle*; Slow Cooling Time- *the amount of time during which the coils are exposed to slow cooling*

18) Solid- *the state of a coil that has been cooled such that it maintains its shape during binding*

19) Sufficient Duration of Travel Time-ordinary meaning; *see* Travel Time

20) Travel Time- *the amount of time something takes to travel .*

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