United States District Court,
E.D. Wisconsin.

FISHER-BARTON BLADES, INC,
Plaintiff-Counterdefendant.
v.
BLOUNT, INC., Dixon Industries, and Frederick Manufacturing Corp,
Defendants-Counterclaimants.

No. 05-C-460

Oct. 19, 2006.

Jonathan H. Margolies, Jacob E. Miota, Michael Best & Friedrich LLP, Milwaukee, WI, for Plaintiff-Counterdefendant.

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DECISION AND ORDER

RUDOLPH T. RANDA**, Chief Judge.**

Background

This decision addresses disputed terms in two patents, U.S. Patent Nos. 5,916,114 and 5,899,052 (the "'114 patent" and the "'052 patent," respectively). The patents relate to high hardness boron steel rotary blades used in lawn mowers, and agricultural and off-highway rotary cutter blades. In a nutshell, the "rotary blade of [the] invention has elevated levels of toughness and hardness, achieved by heat treating a boron steel blank." ('114 patent, 2: 2-4; '052 patent, 2:7-9.)

Darrel Turner ("Turner"), vice president of engineering at the plaintiff, Fisher-Barton Blades, Inc. ("Fisher-Barton"), invented the high hardness boron steel blades, obtained the '114 and '052 patents, and assigned the patents to Fisher-Barton. Fisher-Barton filed this patent infringement action for declaratory judgment, an award of damages, and injunctive relief against the defendant competitors, Blount, Inc., Dixon Industries, Inc., and Frederick Manufacturing Corp. (collectively the "Defendants"). The Defendants filed a counterclaim against Fisher-Barton for declaratory judgment of non-infringement, invalidity and unenforceability of the '114 and '052 patents and an award of attorney fees pursuant to 35 U.S.C. s. 285.

Turner filed the parent application for the '114 and the '052 patents on September 21, 1995. After the patent examiner imposed a restriction requirement, because the patent application recited claims for the process of making rotary cutting blades and claims for the rotary cutting blade product themselves, Turner elected to

prosecute the "process" claims in the application that led to the '114 patent and the "product" claims in the divisional application that led to the '052 patent. The patents have substantively identical specifications. The '114 patent has eleven claims. The '052 patent has three claims. Unless otherwise stated this memorandum cites the ' 114 patent.

The parties request that the Court construe the patents to determine whether a "rotary cutting blade" is required for each claim of the '114 and '052 patent. They also request that the Court construe: "austempering" in claim 1 of the '114 patent; "marquenching" in claim 4 of the '114 patent; and "approximately" and "about" in claims 8 and 11 of the '114 patent.

Principles Governing Claim Construction

Claim construction is question of law for the Court. *See* Nystrom v. TREX Co., 424 F.3d 1136, 1141 (Fed.Cir.2005). The Court's construction of the claims is guided by Phillips v. AWH Corp., 415 F.3d 1303, 1312 -25 (Fed.Cir.2005), which revisited the principles of claim construction and clarified prior case law regarding the use of dictionaries in claim construction. The Court's analysis begins with the claims of the patent. Id. at 1312. The words of the claims in a patent are to be given the ordinary and customary meaning that would have been attributed to them by a person of ordinary skill in the art at the time the invention was made. Id. at 1312-13. A person of ordinary skill in the art is deemed to have read the term in the context of the entire patent, including the claims themselves, the specification, and the prosecution history. Id. at 1313. The claims, specification, and prosecution history are referred to as intrinsic evidence.

Extrinsic evidence is everything "external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." Id. at 1317. Review of technical dictionaries and treatises can be helpful to the Court in understanding the technology of the invention and can assist the Court in determining the meaning of terms to those of skill in the art of the invention. Id. at 1318. Where extrinsic evidence conflicts with the intrinsic evidence of the patent, however, the intrinsic evidence controls. *Id*.

Rotary Cutting Blade

Fisher-Barton asserts that each claim of the patents requires a "rotary cutting blade." Fisher-Barton relies upon the preamble to the patent claims. It also asserts that the field of the invention, background, summary and specification of the patents confirm that the term "rotary cutting blade" is necessary to understand the invention.

The Defendants assert that because the body of the claims fully set out the claimed invention, the term "rotary cutting blade," when used in the preamble, should not be construed as a limitation of the patents. (Defs.' Opening Claim Construction Br. ("Defs.' Opening Br.") 18.) However, the Defendants state that because rotary cutting blade is used in the body of claims 1, 3 and 6, it functions as a limitation in those claims, but not claims 8 and 11 where it only appears in the preamble. (*Id*. at 18-19 n. 93.) They also maintain that to the extent that rotary cutting blade is a claim limitation, it should be construed as a "cutting implement with an anvil-less rotary cutting arrangement." (*Id*. at 20-21 n. 102.)

The independent and dependent claims of the '114 patent begin with or incorporate the phrase "a process for forming a rotary cutting blade comprising...." Independent claim 1 and dependent claim 2 of the '052 patent include the phrase "a rotary cutting blade comprising...." Claim 3 of the ' 052 patent includes the phrase "a mower comprising a rotary cutting blade...."

The introductory words of a claim which constitute a statement of purpose are also referred to a preamble. Corning Glass Works v. Sumitomo Elec. U.S.A., Inc., 868 F.2d 1251, 1256-57 (Fed.Cir.1989) (holding that the preamble "an optical waveguide" was a limitation on the invention.) *Compare,* Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc., 246 F.3d 1368, 1375 (Fed.Cir.2001) (holding that preamble "for reducing hematologic toxicity" was non-limiting, and merely expressed a purpose of reducing hematologic toxicity relative to the toxicity relative to a patient undergoing a 24-hour infusion of an anti-tumor drug.)

Ascertaining whether a preamble is to be construed as a limitation is not subject to any definitive test. Poly-Am., L.P. v. GSE Lining Tech., Inc., 383 F.3d 1303, 1309-10 (Fed.Cir.2004) explains:

"Whether to treat a preamble as a limitation is a determination resolved only on review of the entire[ ] ... patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim." Corning Glass Works v. Sumitomo Elec. U.S.A., Inc., 868 F.2d 1251, 1257 (Fed.Cir.1989). "No litmus test defines when a preamble limits claim scope." Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 808 (Fed.Cir.2002). On the one hand, a preamble is a claim limitation if it recites essential structure or steps, or if it is "necessary to give life, meaning, and vitality" to the claim. *Pitney Bowes,* 182 F.3d at 1305. On the other hand, a preamble is not limiting "where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention." Rowe v. Dror, 112 F.3d 473, 478 (Fed.Cir.1997). "Further, when reciting additional structure or steps underscored as important by the specification, the preamble may operate as a claim limitation." Catalina Mktg., 289 F.3d at 808.

In this case, the prosecution history for the '114 patent strongly suggests that the preamble should be construed as a limitation for the patent. In response to the Office Action of September 10, 1998, the patentee explained:

The preamble language of the amended claims is entitled to be accorded patentable weight. The terms "mower" and "rotary cutting blade" in claims 11 and 1 respectively, are essential to point out the invention defined by the claims. In examining the claims, it is submitted that these words in the preambles "give life and meaning" to the claims. In its analysis of the weight to be given preamble language, the Court of Customs and Patent Appeals stated that usually in cases in which preamble language was necessary to give life, meaning and vitality to the claims, "there inhered in the article specified in the preamble a problem which transcended that before prior artisans and the solution of which was not conceived by or known to them. The nature of the problem characterized the elements comprising the article, and recited in the body of the claim or count following the introductory clause, so as to distinguish the claim or count over the prior art." Kropa v. Robie and Mahlman, 88 USPQ 478, 480 (C.C.P.A.1951). In applicant's invention, the problem which inhered in the rotary cutting blade was providing such a blade which would last longer, be harder, and more durable without compromising the impact strength in such a way as to cause the blade to fail in the brittle mode. The body of the claims in this application presents the solution to this problem.

"The effect preamble language should be given can be resolved only on review of the entirety of the patent to gain understanding of what the inventors actually invented and intended to encompass by the claim." Corning Glass Works v. Sumitomo Electric, 9 USPQ2d 1962, 1966 (Fed.Cir.1989). A review of the present application provides understanding of what the inventors actually invented. From the field of the invention ("The present invention relates to ... rotary mower and cutter blades which must resist impact loads in particular"), to the background ("what is needed is a rotary cutting blade which presents high hardness to

increase wear life, while at the same time exhibiting acceptable toughness levels to insure satisfactory operation and passage of standard blade impact tests."), to the summary ("it is an object of the present invention to provide a rotary blade ..."), to the specification ("the rotary cutter blade 20 of this invention is imparted with both high hardness and acceptable toughness by heat treating boron steel blanks to cause a metallurgical change in the blade structure."), the entirety of the application makes clear what it was that the inventor intended to encompass by the claims.

(Margolies Decl. filed March 30, 2006 para. 4, Ex. C.) Based on the representations made in the prosecution of '114 patent application, the Court concludes that "a rotary cutting blade" is a part of each claim. Since the '052 patent is a division of the application for the '114 patent, the Court also concludes that "a rotary cutting blade" is also a part of each claim of that patent. FN1

FN1. In claim 3 of the '052 patent "rotary cutting blade" is a part of the body of the patent since it appears after the word "comprising."

In arguing that the preamble is not part of the claim, the Defendants rely upon Bristol-Myers, 246 F.3d at 1375-76. However, the situation presented in that case is not comparable to the instant matter. Bristol-Myers, an assignee of patents for a three-hour process for administering an anti-tumor drug, brought a patent infringement action against various competing pharmaceutical companies. *Id*. Upon review, the court held that the preamble "a method for treating a cancer patient to effect regression of a taxol-sensitive tumor, said method being associated with reduced hematologic toxicity" merely expressed the purpose of reducing hematologic toxicity relative to the toxicity experienced by a patient undergoing the 24-hour infusion. *Id*. The court observed that "the steps of the three-hour infusion method [were] performed the same way regardless of whether the patient experienced a reduction in hematologic toxicity *and* the language of the claim strongly suggested the independence of the preamble from the body of the claim." *Id*. (emphasis added); *See also id*. at 1376 (construing a preamble in similar but different claims as only being a statement of purpose and intended result because it did not result in a "manipulative difference in the steps of the claim[s].") Unlike *Bristol-Myers*, this Court has prosecution history expressly stating that the preamble is part of the claims.

Moreover, in this case, the essence of the patents is the rotary cutting blade. The specification is replete with references to a rotary cutting or cutter blades. *See* Poly-Am., 383 F.3d at 1310 (holding that "blown-film" was a limitation of the patent claims, not a purpose or an intended use of the invention). A rotary cutting blade is discussed in the field of the invention, the background and the summary of the invention and the specification. The field of the invention states "the present invention relates to cutting blades in general" and to "rotary mower and cutter blades ... in particular." (1:5-8.) The background of the invention makes numerous references to rotary cutting or cutter blades. (1:11-12; 1:19; 1:28; 1:64.) The description of the drawings also references the rotary cutting blade of the invention. (2:30.) The description of the preferred embodiment states that there are two properties which are of "chief concern in rotary blade cutter function: hardness and toughness." (3:1-2.) This idea is reiterated by the statement the "rotary cutter blade of this invention is imparted with both high hardness and acceptable toughness." (3:24-25.) (*See also* 4:53-55 ("although a disc mower blade has been disclosed, other rotary cutting blades may also be formed according to this invention.").) The Defendants' argument that the term "rotary cutting blade" should not be construed as a limitation of the patents is not consistent with the prosecution history or the language of the patent and is therefore rejected.

The Defendants also contend that to the extent that rotary cutting blade is a claim limitation, it should be construed as a "cutting implement with an anvil-less rotary arrangement." (Defs.' Opening Br. 20-21 n. 103 (citing 4:53-58).) Review of the cited language, in context, discloses that entire statement reads:

It should be noted that although a disc mower blade has been disclosed, other rotary cutting blades may also be formed according to this invention, for example rotary lawn mower blades, flail blades, double edged blades, star blades, and *other anvil-less rotary cutting arrangement blades* may also be formed.

(4:53-59.) (emphasis added.) The sentence syntax indicates that the invention is directed towards forming rotary cutting blades. The placement of phrase "other anvil-less cutting arrangement blades" at the end of the sentence suggests that it is a type of rotary cutting blade. The Defendants' proposed construction of rotary cutting blade is not supported by the cited language read in context and is therefore rejected.

"Austempering" and "Marquenching"

The meanings of "austempering" and "marquenching," two metallurgical heat treating techniques, are jointly addressed to avoid repetition because the arguments with respect each term are similar and overlapping.

Claim 1 states:

A process for forming a rotary cutting blade, comprising the steps of

a) working a blank of boron steel to have a bevelled cutting edge; and

b) heat treating the formed blank to elevate the blank hardness to between 48 and 55 on the Rockwell Hardness Scale FN2 to thereby form a rotary cutting blade having Charpy Notch toughness FN3 of at least 15 ft.lb., wherein the heat treating step comprises *austempering* the formed blank.

FN2. "Hardness is measured on the Rockwell C Hardness Scale and is a good measure of a material's resistance to wear." (3:1-4.)

FN3. "Toughness can be measured on the Charpy Notched Impact Toughness Test per ASTM E-23 and is a good indication of how the material [will] react to impact, in particular giving a reading on the materials tendency to fracture or crack." (3:5-8.)

(5:9-19.) (footnotes and emphasis added.)

Claim 4 states:

A process for forming a rotary cutting blade, comprising the steps of:

a) working a blank of boron steel to have a bevelled cutting edge; and

b) heat treating the formed blank to elevate the blank hardness to between 48 and 55 on the Rockwell Hardness Scale to thereby form a rotary cutting blade having Charpy Notch toughness of at least 15 ft. lb,

wherein the heat treating step comprises *marquenching* the formed blank.

(5:24-34.) (emphasis added.)

Fisher-Barton relies upon the form of the definitions of "austempering" and "marquenching" in the American Society for Metals ("ASM") *Metals Handbook* (" *Handbook I* ") (1964) and the ASM International Metal Handbook ("Handbook II") (1991) and the Turner Declaration. (Fisher-Barton Mem. Claim Construction ("Fisher-Barton Mem.") 4-5.) Fisher-Barton maintains that it may rely upon those definitions because the patent specifications use the terms consistently with the *Handbook I* and *II* definitions. (*Id*. at 6.)

Turner avers that he owns a copy of the ASM International's *Handbook II,* which he has heard referred to as the "bible" of heat treating, he consults it regularly, and that when he drafted the patents he used the terms "austempering" and "marquenching" in a manner consistent with the *Handbook II's* definitions. (Turner Decl. para.para. 3-4.) Fisher-Barton proffers excerpts from the *Handbook I* and *Handbook II* which define the terms. (Turner Decl. para. 4, Exs. A & B.) *Handbook II* defines the term "martempering"-the patent uses the term "marquenching"-but the two terms are used interchangeably in metallurgy. (Krauss Decl. para. 8 n. 1.)

Handbook II defines "austempering" as "the isothermal transformation of a ferrous alloy at a temperature below that of pearlite FN4 formation and above that of martensite FN5 formation." (Turner Decl., Ex. B at 3.) (footnotes added.) It further states that steel is austempered by being:

FN4. Pearlite is a higher temperature transformation product. (Mansfield Decl. Supp. Defs.' Opening Br. ("Mansfield Decl. I") para. 10 & Ex. H (George Krauss, *Steels: Heat Treatment and Processing Principles* 267 (ASM Int'l 1990)).

FN5. Martensite is a generic term for the microstructure formed by diffusionless phase transformation in which the parent and product phases have a specific crystallographic relationship. *Id*. at 462. "An important aspect of 'martempering' is that no transformation product other than martensite should form." *Id*. at 266.

heated to a temperature within the austenizing range, usually 790 to 915 (deg.) C (1450 to 1675 (deg.) F); quenched in a bath maintained at a constant temperature, usually in the range of 260 to 400 (deg.) C (500 to 750 (deg.) F); allowed to transform isothermally to bainite FN6 in this bath; and, cooled to room temperature.
FN6. Bainite is a transformation product that may form just above Ms. *See Id*. at 267.

(*Id*.) (footnote added).

Handbook II defines "martempering" as:

an interrupted quench from the austenizing temperature of certain alloy, cast, tool and stainless steels. This purpose is to delay the cooling just above the martensitic transformation for a length of time to equalize the temperature throughout the piece. This will minimize the distortion, cracking, and residual stress. The term

martempering is somewhat misleading and is better described as marquenching.

(*Id*. at 5.) The steps of "martempering" steel consist of:

quenching from the austenizing temperature into a hot fluid medium (hot oil, molten salt, molten metal or a fluidized particle bed) at a temperature usually above the martensite range (Ms point); holding in the quenching medium until the temperature throughout the steel is substantially uniform; cooling (usually in the air) at a moderate rate to prevent large differences in temperature between the outside and the center of the section.

(*Id*.)

The Defendants, rely upon the patent specification, and assert that the terms "austempering" and "marquenching" have special meanings given to them by the patentee. (Defs.' Opening Br. 9-12.) The Defendants state that although the general processes of "austempering" and "marquenching" were known in the art several decades before the patents were filed, the inventions claimed in the patents-in-suit are the specific "austempering" and "marquenching" steps required by the claims to arrive at the boron steel blades with the claimed hardness and toughness characteristics. The Defendants indicate that Fisher-Barton's proffered definitions of the terms should be rejected because they fail to read the terms in light of the rest of the claim and the specification, completely disregard the express definitions ascribed those terms in the patents, and are inconsistent with the process disclosed in the preferred embodiment. (*Id*. at 16.)

The Defendants rely upon the Declaration of George Krauss ("Krauss"),FN7 a university emeritus professor of the Colorado School of Mines since 1997, who holds a Science Doctorate in Metallurgy and a Master of Science from Massachusetts Institute of Technology and has been involved exclusively in metallurgy and material science since 1955 when he received his Bachelor of Science from Lehigh University. (Krauss Decl. para.para. 1-2.) Krauss indicates that austempering of medium carbon boron steels has been well known for many years and that austempering in general is a method of transforming austenite to lower bainite-a particularly hard and tough steel microstructure in boron steels. (*Id*. at para. 21.) He indicates that austempering, like marquenching begins with heating the work piece to the austenizing temperature and cooling the steel to a temperature above the martensite (M_s) range. (*Id*.) Krauss states that the quenching step differs from marquenching, because in the austempering the steel is held at the quench temperature for a particular duration long past the temperature equalization of the steel in order to allow the formation of lower bainite and not martensite. (*Id*.)

FN7. Krauss has a considerable list of professional positions, achievements, honors and awards including having authored or coauthored more than 300 articles and having authored, co-authored or edited 12 books related to heat treating or tools used for metal fabrication. (Krauss Decl. para. 2 and Ex. 2.) He is also the co-inventor on three U.S. patents. (*Id*.)

The Defendants maintain that this Court should construe the "austempering" as a heat treating process in which the blades are first heated to approximately 1560 (deg.) F.; the heated blades are then quenched into a liquid salt bath at approximately 500 (deg.) F. for about 20 minutes; the quenched blades are then withdrawn from the salt bath and allowed to air cool to room temperature. This alternative process eliminates the need for further tempering. The Defendants' definition is taken from the preferred embodiment.

The Defendants maintain that this Court should interpret "marquenching," as the process whereby the formed blades are first heated to approximately 1560 (deg.) F; the heated blades are then quenched into a liquid salt bath at approximately 500 (deg.) F. for about 20 seconds; the quenched blades are then withdrawn from the salt bath and allowed to air cool to room temperature; and, the cooled blades then proceed to a tempering station where they are tempered at 300 (deg.) F. as a stress relief. This definition is taken from the description of the preferred embodiment. (See 3:66-67 & 4:1-6.)

Krauss notes that claim 4 of the patent sets forth a process for achieving hardness in boron steel to "between 48 and 55 on the Rockwell Hardness scale" and a "Charpy Notch toughness of least 15 ft. lb., wherein the treating step comprises marquenching the formed blank." (Krauss Decl. para. 10.) Krauss opines that a person skilled in the art would understand that because the process claimed seeks to arrive at a particular hardness and toughness in the boron steel, "marquenching" as used in claim 4 must refer to the process that includes particular times, temperatures and quenchants that are necessary to achieve those results from boron steel. (*Id*.) Krauss maintains that because marquenching is not defined in claim 4 a person of ordinary skill in the art would refer to the specification to determine what process is being claimed. (*Id*. at para. 11.) Krauss also avers that a skilled heat treater reading the patent would not understand the term "marquenching" as used in claim 4 to have as broad a definition as advanced by Fisher-Barton. (*Id*. at para. 14.) He states that Fisher-Barton's proposed definition does not provide for achieving the specific hardness and toughness for the boron steels expressly set forth in claim 4. (*Id* .) FN8

FN8. Krauss also indicates that Fisher-Barton's "marquenching" definition is problematic because it does not include a tempering stage once the blades are cooled to room temperature and a person of ordinary skill in the art would realize that a blade that is quenched according the Fisher-Barton general definition, and then air cooled without a subsequent tempering step would be of low toughness such that it would not achieve the claimed Charpy Notch toughness of at least 15 ft. lbs. (Krauss Decl. para. 16.) In its responsive claim construction memorandum, Fisher-Barton agrees to include in its definition of marquenching the step of an additional tempering after cooling. (Fisher-Barton Responsive Br. 9 n. 2.) Therefore, the tempering issue raised by paragraphs 16 and 17 of the Krauss Declaration is moot.

Krauss avers that the M_S temperatures for the medium boron steels that are disclosed in the patent would be known to a skilled person, "for example by using the Andrews equation from his book, *Steels: Heat Treatment and Processing Principles*." (*Id*. para. 15.) He states that the appropriate M_s temperatures are:

Steel	M_s Temperature
10B36	687 (deg.) F.
10B37	673 (deg.) F.
10B38	671 (deg.) F.
10B39	658 (deg.) F.
10B40	656 (deg.) F.

10B41	644 (deg.) F.
10B42	640 (deg.) F.

Krauss avers that because a person of skill in the art would recognize that the general marquenching process (i.e., as used in the context other than the patent) requires that the work piece be held above the M_s temperature until the temperature equalizes, that the lowest possible temperature of the quench would be greater that 687 (deg.) F for 10B36, 673 (deg.) F for 10B37 and so on. (*Id.*) Krauss avers that "the marquenching process described in the '114 patent in column 3, lines 66-67 and column 4, lines 1-6, however, calls for the quench temperature to be approximately 500 (deg.) F., which is well above the M_s temperature for 10B38, or any of the listed boron steels." (Id.) Therefore, Krauss avers that one of skill in that art would realize that the process disclosed in the patent departs from the general marquenching process, such that a skilled person would understand the term "marquenching" as used in the claim to have the special meaning ascribed in the patent that achieve the claimed hardness and toughness characteristics. (Id.)

The Defendants' arguments regarding the meanings of "austempering" and "marquenching" have some initial appeal because they focus in part on intrinsic evidence, which is generally preferred over extrinsic evidence. However, Krauss's interpretation of the intrinsic evidence, upon which the Defendants rely, is extrinsic evidence. Krauss's construction of "marquenching" also centers on boron steel designations 10B36 through 10B42 but claim 4 provides for working a blank of boron steel blank but does not include designation of the boron steel type. (*Compare* claims 3, 7, 9 (5:21-24; 6:7-9; 6:26-28) ("wherein the blank is formed of a boron steel selected from the group consisting of 10B36, 10B37, 10B38, 10B39, 10B40, 10B41, and 10B42 steel.") Ultimately, careful consideration of the Defendants' position reveals that if accepted, the Court would be improperly importing the preferred embodiment into the claims. Furthermore, consideration of the terms in **the context of the entire patent** does not indicate that the patentee redefined the terms "austempering" and "marquenching." *See* Phillips, 415 F.3d at 1313. Therefore, the Court adopts Fisher-Barton's construction of the terms.

"Judges are free to consult dictionaries and technical treatises at any time in order to better understand the underlying technology and may also rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents." Phillips, 415 F.3d at 1322-23 (quoting Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1584 n. 6 (Fed.Cir.1996).) The *Handbook II* was the starting point for the Court in construing these metallurgical terms, which are familiar to a metallurgical lay person. But, the Court has carefully considered the intrinsic evidence-the patent claims and the rest of the specification in its analysis.

Claim 1 uses the term "austempering" as a component of the heat treatment process claimed. Claim 4 uses "marquenching" as a component of the heat treatment process claimed. Neither claim defines the term. However, each term has a commonly accepted meaning known to one skilled in the art of metallurgy.

The proposed constructions of the terms urged by the Defendants is drawn from the preferred embodiment portion of the patent.FN9 However, limitations from the specification are not to be read into the claims. *See* Golight, Inc. v. Wal-Mart Stores, Inc., 355 F.3d 1327, 1331 (Fed.Cir.2004). This principle was reaffirmed in Phillips, 415 F.3d at 1323, where the court recognized that the distinction between using the specification to interpret the meaning of a claim and importing limitations from the specification into the claim can be a difficult one to apply in practice. *Id.* (citing Comark Communc'ns, Inc. v. Harris Corp., 156 F.3d 1182,

1186-87 (Fed.Cir.1998) ("there is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specification.")) However, the line between construing terms and importing limitations can be discerned with reasonable certainty and predictability if the Court's focus remains on understanding how a person of ordinary skill in the art would understand the claim terms. *Id*. "Although the specification often describes very specific embodiments of the invention, [the court] repeatedly warned against confining the claims to those embodiments," and had "expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment." *Id*.

FN9. The description of the preferred embodiment states, in pertinent part:
In one advantageous heat treating process, known as Marquenching, the formed blades are first heated to approximately 1560 (deg.)F. The heated blades are then quenched into a liquid salt bath at approximately 500 (deg.) F. for about 20 seconds. The quenched blades are then withdrawn from the salt bath and allowed to air cool to room temperature. The cooled blades then proceed to a tempering station 36 where they are tempered at 300 (deg.) degrees F. as a stress relief.

Alternatively, the formed and edged blade may be subjected to an austempering heat treating process in which the blades are first heated to approximately 1560 (deg.) F. The heated blades are then quenched into a liquid salt bath at approximately 500 (deg.) F. for about 20 minutes. The quenched blades are then withdrawn from the salt bath and allowed to air cool to room temperature. This alternative process eliminates the need for further tempering.

(3:66-67; 4:1-14.)
In this case, the specification includes only one preferred embodiment as to the "austempering" and "marquenching" processes. The Defendants' proposed construction would require importation of the preferred embodiments into the claims-contrary to *Phillips*. The Defendants have not established that the claims or the specification indicate that a special definition of "marquenching" or "austempering" was used. To a great extent, the Defendants' interpretation of the terms rests on their assumption that a single blade is processed at a time. However, the patent does not embrace that assumption.

Furthermore, if the Defendants' construction of "marquenching" and "austempering" were adopted the portions of claims 8(b) and 1 1(b) which follow the phrase "wherein the heat treating step comprises ..." would be superfluous. The patentee could have merely inserted the "marquenching" in claim 8(b) and "austempering" in claim 11(b). Therefore, the Defendants' proposed constructions of austempering and marquenching are rejected.

"About" and "Approximately"

The parties have requested that the Court construe the meanings of "approximately" and "about" in claims 8 and 11. These terms are closely related and appear in the same sections of the claims and therefore are addressed together.

Claim 8(b) states: "the heat treating step comprises the steps of heating the blank to approximately 1560 (deg.) F.; quenching the heated blank into a liquid salt bath at approximately 500 (deg.) F. for about 20

seconds; withdrawing the quenched blank from the salt bath and allowing it to air cool to room temperature; and tempering the cooled bank at approximately 300 (deg.) F." (6:17-23.)

Claim 11(b) states "the heat treating step comprises heating the blank to approximately 1560 (deg.) F.; quenching the heated blank into a liquid salt bath at approximately 500 (deg.) F. for about 20 minutes; and withdrawing the quenched blank from the salt bath and allowing it to air cool to room temperature." (6:35-40.)

"The word 'about' does not have a universal meaning in patent claims, and that the meaning depends on the technological facts of the particular case." Pall Corp. v. Micron Separations, Inc., 66 F.3d 1211, 1217 (Fed.Cir.1995). Furthermore, the word "about," avoids a strict numerical boundary to the specified parameter. *Id* . Its range must be interpreted in its technologic and stylistic context. *Id*. The court in *Pall* considered how the term "about 5:1 to about 7:1" was used in the patent specification, the prosecution history, and other claims. *Id*. It is appropriate to consider the effects of varying that parameter, for the inventor's intended meaning is relevant. *Id*. Extrinsic evidence of meaning and usage in the art may be helpful in determining the criticality of the parameter, and may be received from the inventor and others skilled in the field of the invention. *Id*. (citing *Markman,* 52 F.3d at 980)). In Merck & Co., Inc., v. Veva Pharm., 395 F.3d 1364, 1371 (Fed.Cir.2005), tasked with the construction of the word "about, "the court held that it should be given its ordinary meaning of "approximately."

Fisher-Barton urges that one of ordinary skill in the art would understand that the terms "approximately" and "about" permit reasonable ranges on either side for the times and temperatures stated and that the steps of the claimed process are not limited to the exact temperatures and time period recited. (Fisher-Barton Mem. 6.) Fisher-Barton relies upon the Turner Declaration as establishing that one with skill in the art would understand the temperatures to include plus or minus 10% of the stated temperature. (*Id*.) Thus, 500 (deg.)F would mean a range 450 (deg.)F. to 550 (deg.)F., 300 (deg.)F. would mean a range of 270 (deg.) to 330 (deg.)F. and 1560 (deg.) F. could vary between 1404 (deg.)F. and 1716 (deg.) F. (*Id*.)

Likewise, Fisher-Barton asserts that one skilled in the art of metallurgy would understand "about 20 seconds" in claim 8 as meaning plus or minus five seconds (15 to 25 seconds) and "about 20 minutes" in claim 11 as meaning plus or minus five minutes (15 to 25 minutes). (*Id*. at 7.) Fisher-Barton states that such ranges are well within the typical tolerances of the heat treating process. (*Id*.)

The Defendants claim that "approximately" should be construed to mean plus or minus five degrees. (Defs.' Opening Br. 16.) Thus, the 500 (deg.) F. quench temperature would have a range from 495 (deg.) F. to 505 (deg.) F. and the 300 (deg.) F. tempering temperature would have a range from 295 (deg.) F. to 305 (deg.) F. (*Id*. at 16-17.) The Defendants do not offer any construction of the range for the heating temperature of the metal.

Relying on the Krauss Declaration, the Defendants maintain that "about" with respect to the time in claims 8 and 11 should be construed to mean plus or minus 10%, which would mean a range from 18 to 22 seconds and a range from 18 to 22 minutes. (*Id*. at 17.) Krauss opines that one skilled in the art of metallurgy would consider a reasonable range for the duration of the quench to be plus or minus 10% of the specified time. (Krauss Decl. para. 27.) Krauss indicates that since claim 8:

appears to be aiming at martensite formation ... it is important to allow the work piece to be in the quench long enough for the surface and interior of the work piece to equalize, but not so long as to allow for the

formation of bainite or other non-martensitic structures. To allow the piece to stay in the quench much longer would result in the additional formation of bainite.

(*Id*.)

With respect to claim 11, Krauss avers that one skilled in the art would consider a reasonable range of plus or minus 10% of the specified time to be reasonable. He avers that to go below that time would create a high risk of preventing the austenite from fully transforming to bainite, and thus would allow the formation of other microstructures, such as martensite. (*Id*. at para. 28.) Krauss states that these other microstructures are certainly disfavored in trying to achieve a blade having the characteristics of high hardness and high toughness without tempering the blade once it has been cooled to room temperature. (*Id*.)

In response, Fisher-Barton asserts that Krauss offers a very narrow range of what "about" and "approximately" would mean to one skilled in the art. Fisher-Barton also relies upon the Declaration of Apolonio Ortiguera ("Ortiguera").FN10

FN10. Ortiguera is a consulting metallurgist retained by Fisher-Barton. Ortiguera has 35 years of experience in metallurgy. The Court has considered the Ortiguera Declaration but does not find it helpful in resolving the issues presented because it contains unsupported conclusory assertions. *See* Phillips, 415 F .3d at 1318.

In the Defendants' response, they state that given the accuracy of quench tank controls a skilled heat treater would read the language "approximately 500 (deg.) F" to mean plus or minus 5 (deg.) to 10 (deg.) F. (Defs.' Responsive Claim Construction Br. ("Defs.' Responsive Br.") 11.) They also proffer the Declaration of Glenn True ("True").FN11 The Defendants state that the specification and the claim language indicate that the close tolerances of their definition are the appropriate construction.

FN11. True is the owner of Superior Metals Treating and Equipment Inc., located in Kansas City, Missouri. (True Decl. para. 1.) Since 1964, True has been heat treating lawn mower blades using a variety of metals including 10B38 steel. (*Id*. at para. 1.) Since 1972, True has treated lawn mower blades for defendant Frederick Manufacturing. (*Id*. at para. 1.)

Much of the evidence proffered on the meaning of "approximately" is extrinsic evidence. Having considered the varying opinions regarding "approximately" and what it means in the context of quenching, this Court finds the plus or minus 5 (deg.) F. to 10 (deg.) F. construction to be most persuasive. True is a person skilled in the art of heat treating steel blades and his opinion is consistent with the quenching range in the *Handbook*. Turner has attested to his reliance upon the *Handbook* (even though he has not relied upon it in his opinion of "approximately"). While Turner is skilled in the art and the inventor, his opinion as to the temperature range is a mere conclusion and no basis for his conclusion is explained.

Krauss's interpretation of "approximately" as meaning plus or minus 5 (deg.) is rejected as being a narrower temperature range than specified by the *Handbook*. The Defendants have not offered any evidence regarding the meaning of "approximately" when considering the temperature range in the heating process. But, patent terms are normally used consistently throughout the patent. Phillips, 415 F.3d at 1314. Thus, the Court adopts the 5 (deg.) to 10 (deg.) F range in interpreting the term "approximately" in claims 8 and 11 of the '114 patent.

In determining the meaning of "about" the Court notes that Turner testified at his deposition that attributing the meaning of five seconds to "about" that gives "a relatively small window of opportunity" to pull a rack of parts out of a marquenching tank and that "from a practical standpoint" you need "at least that much time for it to be workable." (Mansfield Decl. Supp. Defs.' Responsive Br. para. 3, Ex. A. (Turner Dep.) 55.) Turner's explanation is the most persuasive of those offered and is therefore adopted. Since patent terms are to be construed consistently the Court construes "about" as follows; "about 20 seconds" in claim 8 means plus or minus five seconds (15 to 25 seconds) and "about 20 minutes" in claim 11 means plus or minus five minutes (15 to 25 minutes).

NOW, THEREFORE, BASED ON THE FOREGOING, IT IS HEREBY ORDERED THAT:

1. Each claim of the '114 and '052 patents requires a "rotary cutting blade."

2. As used in claim 1 of the '114 patent "austempering" means: heated to a temperature within the austenizing range, usually 790 to 915 (deg.) C (1450 (deg.) to 1675 (deg.) F); quenched in a bath maintained at a constant temperature, usually in the range of 260 (deg.) to 400 (deg.) C (500 (deg.) to 750 (deg.) F); allowed to transform isothermally to bainite in this bath; and, cooled to room temperature.

3. As used in claim 4 of the '114 patent "marquenching" means: Quenching from the austenizing temperature into a hot fluid medium (hot oil, molten salt, molten metal or a fluidized particle bed) at a temperature usually above the martensite range (Ms range); holding in the quenching medium until the temperature throughout the steel is substantially uniform; cooling (usually in the air) at a moderate rate to prevent large differences in temperature between the outside and the center of the section. After the parts have been cooled to room temperature, they are tempered in the same manner as though they had been conventionally quenched.

4. The term "approximately" in claims 8 and 11 of the '114 patent means plus or minus 5 (deg.) to 10 (deg.) F.

5. The term "about" in claims 8 and 11 of the '114 patent means plus or minus five seconds (15 to 25 seconds) in claim 8 and plus or minus five minutes (15 to 25 minutes) in claim 11.

E.D.Wis.,2006.
Fisher-Barton Blades, Inc. v. Blount, Inc.

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