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

The GLEASON WORKS,
Plaintiff.
v.
OERLIKON GEARTEC AG, et al,
Defendants.

No. 98-CV-6275L

Nov. 25, 2002.

Owner of patent for gear-making machine sued competitors for infringement. On cross-motions for partial summary judgment, the District Court, Larimer, Chief Judge, held that: (1) requirement that work be "adjusted" did not require multiple-step process; (2) fact question existed as to whether patent satisfied best-mode requirement; and (3) patent was enabling.

Owner's motion granted in part and denied in part; competitors' motion denied.

Patent infringement defendant's best mode defense would not be stricken as untimely; defense was asserted promptly after relevant information was obtained from patentee's witness, and patentee had not been unfairly prejudiced in its ability to contest issue.

Michael Wolford, Wolford & LeClair, LLP, Rochester, NY, John M. Romary, Jeanne M. Tanner, Liam O'Grady, Robert A. Matthews, Jr., Christopher P. Foley, Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, Washington, DC, for Plaintiff.

Lawrence Cruz, John Linderman, McCormick, Paulding & Huber, LLP, Hartford, CT, Paul J. Yesawich, III, Neal L. Slifkin, Harris Beach LLP, Pittsford, NY, Lawrence Cruz, Wm. Tucker Griffith, for Defendant.

DECISION AND ORDER

LARIMER**, Chief Judge.**

This is a patent infringement action brought by plaintiff The Gleason Works ("Gleason") against defendants Oerlikon Geartec, AG ("Oerlikon") and Liebherr-America, Inc. ("Liebherr"). FN1 Gleason is the holder of United States Patent No. 4,981,402 ("the '402 patent"), which was issued on January 1, 1991 and is entitled, "Multi-Axis Bevel and Hypoid Gear Generating Machine." Gleason's complaint alleges that defendants manufacture and sell in the United States gear-making machines that infringe the '402 patent. Gleason seeks damages, injunctive relief, declaratory relief, attorneys' fees and costs.

FN1. Another defendant, Klingelnberg-Oerlikon Geartec Vertriebs-GmbH, was dismissed pursuant to the parties' stipulation on November 25, 1998.

A number of motions are pending before the Court, including defendants' motion for partial summary judgment of invalidity for best mode violation FN2, and plaintiff's cross-motion to strike defendants' invalidity defenses or in the alternative for partial summary judgment on the issues of best mode and enablement. The following Decision and Order constitutes my ruling on those motions, as well as on the construction of disputed claim terms.

FN2. Defendants originally moved for partial summary judgment of invalidity for nonenablement as well. Defendants have since withdrawn that basis for their motion. *See* Defendants' Reply Brief (Docket # 107) at 1; Transcript, Dec. 17, 2001, at 3, line 19-4, line 2.

I. Summary of the Invention

The claimed invention is a computer-controlled machine ("the new machine") and a method for generating gears in a particular manner. In any gear-generating machine, gears are cut from metal blanks called the "work" or "work gears," which are simply gears without teeth. The teeth are cut into the work with the "tool," which is a disc with cutting blades along its edge, and which spins around an axis as it cuts teeth into the work gear.

When gears are being cut, the tool and work must be in a particular position relative to each other at any given point in the generating process. Previously, in most conventional machines this was achieved by having the work and tool each move along a number of axes; typically, the tool would also be tilted at various angles as needed to cut the gears in the desired shape and position.

The new machine disclosed by the '402 patent simplifies this process by reducing the number of axes along which the tool and work move. The new machine also mimics the effects of "tool tilt" without requiring that the tool actually be tilted; in other words, in the new machine, the tool remains in a fixed orientation relative to the base of the machine, rather than being tilted at various angles, as in earlier machines. The result is a simpler machine and simpler process that can generate gears as effectively and easily as prior, more complex machines using more cumbersome processes.

II. Claim Construction as Prerequisite to Best-Mode Analysis

[1] As stated, one of the issues before me is whether plaintiff, the patentee, has complied with the best mode requirement of 35 U.S.C. s. 112 (1994), which provides that a patent specification "shall set forth the best mode contemplated by the inventorof carrying out his invention." The Court of Appeals for the Federal Circuit has held that "the first step in a best mode inquiry ... *must* be to define the invention by construing the claims." Bayer AG v. Schein Pharm., Inc., 301 F.3d 1306 (Fed.Cir.2002) (citing Northern Telecom Ltd. v. Samsung Elec. Co., 215 F.3d 1281, 1286-87 (Fed.Cir.2000)). "Once the invention has been defined by examining the claims, the finder of fact-be it the court or a jury-can proceed to determine whether the inventor subjectively possessed a best mode of practicing the claimed invention, and if so whether the specification adequately discloses that mode." Bayer AG, 301 F.3d 1306, 2002 WL 1830197, *12. Accordingly, the Court will proceed to construe the disputed claims before addressing the motions for summary judgment.

III. Claim Construction-General Standards

"[S]econd, it is always necessary to review the specification to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning. The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication." Vitronics, 90 F.3d at 1582; Markman, 52 F.3d at 979. Because 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 practice the invention, the specification "is the single best guide to the meaning of a disputed term." Vitronics, 90 F.3d at 1582.

"Third, the court may also consider the prosecution history of the patent, if in evidence." *Id*. The Court of Appeals for the Federal Circuit has described the prosecution history as "often of critical significance in determining the meaning of the claims." *Id*. (citing Markman, 52 F.3d at 980).

[5] [6] [7] If this "intrinsic" evidence, *i.e*. the claims, the specification, and the prosecution history, is unambiguous, the court may not look to other, extrinsic evidence. Elkay Mfg. Co. v. Ebco Mfg. Co., 192 F.3d 973, 976-77 (Fed.Cir.1999), *cert. denied,* 529 U.S. 1066, 120 S.Ct. 1672, 146 L.Ed.2d 482 (2000); Pitney Bowes, Inc., v. Hewlett-Packard Co., 182 F.3d 1298, 1308-9 (Fed.Cir.1999); Vitronics, 90 F.3d at 1583. Extrinsic evidence is that evidence which is external to the patent and file history, such as expert testimony, inventor testimony, dictionaries, and technical treatises and articles. Vitronics, 90 F.3d at 1584. The court may receive extrinsic evidence to educate itself about the invention and the relevant technology, but it may not use extrinsic evidence to arrive at a claim constructionthat is clearly at odds with the construction mandated by the intrinsic evidence. *See* Key Pharms. v. Hercon Labs. Corp., 161 F.3d 709, 716 (Fed.Cir.1998). Extrinsic evidence, then, may be used only to help the court come to the proper understanding of the claims; it may not be used to vary or contradict the claim language.

IV. Disputed Claims in the '402 Patent

The parties' motion papers and oral argument have narrowed the number of claim terms in dispute to a relative few. The core dispute here focuses on the words "adjusting" and "controlling," which appear at various points throughout the claims, and certain other terms closely related to the "adjusting" and "controlling" functions of the machine. In particular, the parties disagree about whether the '402 patent discloses a "two-step" or a "one-step" process for adjusting the rotation of the work gear in order to control the relative rotations of the work and the tool, so as to maintain the predetermined timed relationship ("PTR") between them. Maintenance of the PTR in a predetermined relative rolling motion ("PRRM") is crucial to the successful generation of the gears.

[8] In the new machine, values representing the relative positions of the tool and work in a conventional machine (*i.e.,* a machine in which the tool is tilted) are transformed into corresponding values in the coordinate system of the new machine. However, the patent states that the rotation of the work gear must also be "adjusted" in order to maintain the predetermined rolling motion and timed relationship between the tool and the work gear. *See, e.g.,* '402 Patent, col 29., lines 47-52, 59-66; col. 30, lines 1-7. Specifically, the work rotation in the new machine is adjusted by a certain variable, which plaintiff dubbed "alpha," in order to mimic the effect of tilt. In addition, when a continuous-indexing process is used, *i.e.,* when all of a gear's teeth are being cut at the same time (as opposed to intermittent indexing, when the teeth are cut one at a time), an additional variable, "beta," is added to the work rotation. In short, these adjustments are necessary

to mimic the effect of tilt in the new machine.

Defendants contend that the claims should be construed to require a two-step process for adjusting the relative rotation of the tool and work gear. This process, according to defendants, includes an intermediate step which determines an adjusting value, either alpha or beta, and a second step in which that value is added to a predetermined value in order to establish a resultant control signal for rotating the tool and work gear.

Plaintiff argues that the claims should not be so limited. Plaintiff states that the '402 patent, properly construed, simply requires that the work rotation, and other parts of the machine, be moved to compensate for the effect of a tilted tool. In plaintiff's view, whether alpha and beta are embedded in the calculation of the work rotation position or separately calculated makes no difference as long as the required "adjusting" of the work rotation is achieved.

After reviewing the patent and the parties' submissions on this issue, I agree with plaintiff that the claims of the '402 patent do not require a two-step process, and that they are broad enough to include a machine that adjusts the work rotation by the magnitude of alpha and beta, without separately calculating those two values as an independent step in the process.

As stated, in determining the meaning of disputed terms, the court should begin by looking at the language of the claims themselves.Bell & Howell, 132 F.3d at 705; Vitronics, 90 F.3d at 1582. In the claims of the '402 patent, the terms "alpha" and "beta" do not appear, nor is there any language expressly setting forth a two-step process.

Defendants argue that the term "adjust," which does appear in the claims, necessarily implies a two-step process. In defendants' view, in order to adjust something, one must first have a starting point or position, determine some difference between that position and the desired position, and then use the amount of that difference as an adjustment value to bring about the necessary degree of change.

As stated, the words of the claims are generally to be given their ordinary and customary meaning, unless it appears from the patent or file history that some special definition is intended. K-2 Corp., 191 F.3d at 1362-63. While the word "adjust" may, in some contexts, imply some change in the relation between two or more things, I do not agree with defendants that it necessarily implies, in the context of the '402 patent, a first step in which some adjustment value is calculated, and then a change in the amount of that value as a second step.

Webster's Third New International Dictionary (1981) sets forth about ten different definitions of the word "adjust." FN3 The Federal Circuit has provided some guidance for using dictionary definitions, stating that

FN3. The Federal Circuit has stated that "dictionaries hold a special place in claim construction, and judges 'may ... rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by the reading of the patent document.' " Union Carbide Chem. & Plastics Tech. Corp. v. Shell Oil Co., 308 F.3d 1167, 1178 n. 4 (Fed.Cir.2002) (quoting Vitronics, 90 F.3d at 1584). *See also* Schumer v. Laboratory Computer Systems, Inc., 308 F.3d 1304, 1310 (Fed.Cir.2002) ("The proper approach is to construe the claim language using standard dictionary definitions" if the claims have no specialized meaning); Texas Digital Systems, Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202 (Fed.Cir.2002) ("It has been long recognized in our precedent and in the precedent of our

predecessor court, the Court of Customs and Patent Appeals, that dictionaries, encyclopedias and treatises are particularly useful resources to assist the court in determining the ordinary and customary meanings of claim terms").

[b]ecause words often have multiple dictionary definitions, some having no relation to the claimed invention, the intrinsic record must always be consulted to identify which of the different possible dictionary meanings of the claim terms in issue is most consistent with the use of the words by the inventor. If more than one dictionary definition is consistent with the use of the words in the intrinsic record, the claim terms may be construed to encompass all such consistent meanings. The objective and contemporaneous record provided by the intrinsic evidence is the most reliable guide to help the court determine which of the possible meanings of the terms in question was intended by the inventor to particularly point out and distinctly claim the invention. *See* Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1250 (Fed.Cir.1998) ("The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction"). Texas Digital Systems, Inc. v. Telegenix, Inc., 308 F.3d 1193, 2002 WL 31307212, (Fed.Cir. Oct.16, 2002) (citations omitted).
One definition in Webster's of "adjust" is clearly consistent with the terms of the '402 patent: "to bring to a true or effective relative position (as the parts of a device) ...." As an example, Webster's gives the phrase, "[to adjust] a carburetor."

Similarly, the Oxford English Dictionary Online (http:// dictionary.oed.com) provides nine definitions of "adjust," two of which seem apt here: "To arrange or dispose (a thing) suitably in relation to something else, or to a standard or purpose"; and "To arrange or dispose (a thing) suitably in relation to its parts; to put in proper order or position; to regulate, systematize."

These definitions, which I believe reflect the commonly understood meaning of "adjust" in a way that is consistent with its usage in the '402 patent, do not indicate that there must be some two-step process in which an adjustment value is first calculated with reference to some other value, and then added to, or subtracted from, that other value. As the term is used in the '402 patent, to "adjust" the work rotation means simply to bring it into the correct physical relationship with the tool, so as to maintain the PRRM and the PTR between the work and tool, in order to compensate for the effect of tool tilt.

Nor is there any reason here to adopt a construction that differs from these ordinary meanings. Dictionary definitions may be used unless "the patentee, acting as his or her own lexicographer, has clearly set forth an explicit definition of the term different from its ordinary meaning," Texas Digital Systems, 308 F.3d at 1193, 1203, or where "the specification uses the word [ ] in a manner clearly inconsistent with the ordinary meaning reflected ... in a dictionary definition." *Id*. There is nothing in the '402 patent that leads me to believe that the patentee intended the word "adjust" to have an unusual or specialized meaning, and indeed, defendants themselves have argued that an ordinary, dictionary definition of "adjust" supports their construction of the claims. *See* Defendants' Claim Construction Memorandum at 5.

[9] In support of their position, defendants rely to a great extent on the patent specification. "As [the Court of Appeals for the Federal Circuit] ha[s] often stated, the claims must be read in view of the specification, *see* Markman, 52 F.3d at 979, but limitations from the specification are not to be read into the claims." Teleflex, Inc. v. Ficosa North America Corp., 299 F.3d 1313, 1326 (Fed.Cir.2002) (citing *see* Comark Communications, Inc. v. Harris Corp., 156 F.3d 1182, 1186 (Fed.Cir.1998)). "While a court may look to the

specification and prosecution history to interpret what a patentee meant by a word or phrase in a claim, extraneous limitations cannot be read into the claims from the specification or prosecution history." Bayer AG. v. Biovail Corp., 279 F.3d 1340, 1348 (Fed.Cir.2002).

Defendants' attempt to limit the claims by the references in the specification to alpha and beta runs afoul of these principles. A fair reading of the '402 patent indicates that the specification's disclosure of alpha and beta values defines the amount or magnitude of the adjustment required, but to turn that into an additional claim limitation, requiring that there be a separate step of calculating alpha and beta, would be contrary to this well-established case law.

The same principles apply with respect to the preferred embodiment. "Generally, particular limitations or embodiments appearing in the specification will not be read into the claims." Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 867 (Fed.Cir.1985), *overruled on other grounds,* Nobelpharma AB v. Implant Innovations, Inc., 141 F.3d 1059 (Fed.Cir.), *cert. denied,* 525 U.S. 876, 119 S.Ct. 178, 142 L.Ed.2d 145 (1998) (cited in Texas Digital Systems, 308 F.3d at 1203).

Defendants argue that the preferred embodiment in the '402 patent (which recites the use of alpha and beta in making the necessary adjustments) is described as the invention itself, and is the only subject matter described and enabled in the specification. The Federal Circuit has cautioned, however, that "if an invention is disclosed in the written description in only one exemplary form or in only one embodiment, the risk of starting with the intrinsic record is that the single form or embodiment so disclosed will be read to require that the claim terms be limited to that single form or embodiment." Texas Digital Systems, 308 F.3d at 1203 (citing Teleflex, Inc. v. Ficosa North America Corp., 299 F.3d 1313, 1328 (Fed.Cir.2002) ("To the extent that the district court construed the term 'clip' to be limited to the embodiment described in the specification, rather than relying on the language of the claims, we conclude that the district court construed the claim term 'clip (28)' too narrowly"); Comark Communications, Inc. v. Harris Corp., 156 F.3d 1182, 1186 (Fed.Cir.1998) (cautioning against the limitation of the claimed invention to preferred or specific embodiments or examples); Transmatic, Inc. v. Gulton Indus., Inc., 53 F.3d 1270, 1277 (Fed.Cir.1995) ("a patent claim is not necessarily limited to a preferred embodiment disclosed in the patent"); SRI Int'l, Inc. v. Matsushita Elec. Corp., 775 F.2d 1107, 1121 n. 14 (Fed.Cir.1985) (*en banc*) ("That a specification describes only one embodiment does not require that each claim be limited to that one embodiment")).

Nor do I agree with defendants' assertion that the file history indicates that a two-step process is required. All that the file history shows is that the inventors distinguished certain prior art (referred to as "Arita") by noting that Arita could not account for the effect of tool tilt. Defendants' attempt to show that the file history reveals otherwise is, in my view, based on a strained interpretation that is not supported by the record.

For much the same reasons, I also reject defendants' proposed construction of the terms, "means for imparting," and "means for adjusting," which are found in claims 52 and 53, and the term "computer," which appears in several claims, of which claims 30-36 are most pertinent here.

Claim 52 claims a machine having a "means for imparting a PRRM between said tool and said work gear about a theoretical axis of rotation defined by said motion," wherein "said motion means includes means for adjusting said rotation of the work gear to compensate for additional relative movements of said theoretical axis of rotation about said work axis so as to maintain said predetermined relative rolling motion." '402 Patent, col. 35, lines 52-60.

Claim 53 claims

[t]he machine of claim 52 wherein said motion means also includes means for imparting relative rotations between said work gear and said tool about their respective axes in a predetermined timed relationship with each other, and the further improvement wherein said motion means also includes means for adjusting one of said rotation of the work gear and said rotation of the tool in response to additional relative movements of said work axis about said tool axis so as to maintain said predetermined timed relationship.

'402 Patent, col. 35, line 61-col. 36, line 2.

Claims 30-36 claim "a computer numerically controlled machine" in which the computer performs certain tasks, which in short relate to controlling the PRRM between the tool and work gear in a predetermined timed relationship with each other,and to adjusting the rotation of the work gear so as to maintain the PTR and the PRRM between the tool and work gear.

Defendants would construe these claims to mean that a computer connected to the machine's drive motors carries out a two-step process of calculating alpha and beta phase adjustment angles, and then adds those values to the work gear rotation. These claims are not so limited, however.

Defendants argue that the Jepson form of these claims, in which "the claim first describes the scope of the prior art and then claims an improvement over the prior art," Dow Chem. Co. v. Sumitomo Chem. Co., Ltd., 257 F.3d 1364, 1368 (Fed.Cir.2001), suggests that a two-step process is implied. As plaintiff admits, the claims are written in Jepson form, in that the first portion of which recites what was in the Arita prior art, and the second portion recites the claimed improvement over Arita. Arita lacked the means for adjusting the work or tool so as to produce effective tool tilt.

The '402 patent, however, does not require a two-step adjustment process. The parties agree that Claims 52 and 53 are written in a means-plus-function format under s. 112 para. (6). That paragraph states:

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.

"The first step in construing such a limitation is to identify the function of the means-plus-function limitation. The next step is to identify the corresponding structure in the written description necessary to perform that function." Texas Digital Systems, Inc. v. Telegenix, Inc., 308 F.3d 1193, 1207 (Fed.Cir.2002) (citing Micro Chem., Inc. v. Great Plains Chem. Co., 194 F.3d 1250, 1258 (Fed.Cir.1999)).

Defendants argue that because these claims relate to a computer, the disclosed structure is not simply a general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm. *See* Creo Products, Inc. v. Presstek, Inc., 305 F.3d 1337, 1345 (Fed.Cir.2002); WMS Gaming Inc. v. International Game Tech., 184 F.3d 1339, 1348 (Fed.Cir.1999). Defendants contend that because the patent discloses only one algorithm, a mathematical formula in figure 6b of the patent that includes the calculation of alpha and beta values, these claims must be construed to require a two-step transformation process.

The written description of the '402 patent also states, however, that there are other mathematical formulas that may be used. Specifically, the patent states that "[a]lthough the above mathematical relations have been disclosed in terms of vector operations, the long-standing format of choice of gear theoreticians, the same relations may be readily expanded into equivalent trigonometric expressions or collected into a single matrix transformation. " '402 Patent, col. 27, lines 61-64. This does not indicate that alpha and beta must be calculated separately, but rather suggests that there are various mathematical expressions, which may or may not include a calculation of alpha or beta, that will yield the same result. Section 112, para. 6 itself provides that a means-plus-function claim "shall be construed to cover ... equivalents" of the corresponding structure. Accordingly, a machine need not employ a computer that calculates alpha and beta as a separate step in order to fall within the scope of these claims. *See* Kahn v. General Motors Corp., 135 F.3d 1472, 1476 (Fed.Cir.) ("Claims written in means-plus-functionform are interpreted to cover the structure set forth in the specification and its equivalents"); Creo, 305 F.3d at 1346 ("where the specification discloses different alternative embodiments, the claim is valid even if only one embodiment discloses corresponding structure") (citing Cardiac Pacemakers, Inc. v. St. Jude Med., Inc., 296 F.3d 1106, 1113-14 (Fed.Cir.2002)), *cert. denied,* 525 U.S. 875, 119 S.Ct. 177, 142 L.Ed.2d 144 (1998).

In sum, I am not persuaded by defendants' attempt to limit the claims at issue by requiring a two-step transformation process. Although the alpha and beta values are set out in the specification, the claims themselves are broader than that, and it would be improper to import limitations from the specification into the claims. Teleflex, 299 F.3d at 1326.

In their papers relating to claim construction, both sides have submitted their proposed construction of the claims at issue. In sum, I am not persuaded by defendants' attempt to limit the claims at issue by requiring a two-step transformation process. Although the alpha and beta values are set out in the specification, the claims themselves are broader than that, and it would be improper to import limitations from the specification into the claims. Teleflex, 299 F.3d at 1326.

In their papers relating to claim construction, both sides have submitted their proposed construction of the claims at issue. Although I agree with plaintiff's arguments concerning the correct construction of the disputed claim terms, plaintiff's Proposed Order on Claim Construction (*Markman* Hearing Ex. 121) is not written in a format suitable for use in instructing a jury of laypeople on what the claims mean; in some parts, the proposed constructions are written in language almost as technical as that of the '402 patent itself. *See, e.g.,* Gleason's Proposed Order on Claim Construction at 4 ("The 'controlling' step is satisfied if the rotation of the work gear, rectilinear movements of the tool and work, and pivoting of the work relative to the tool are the same as the work rotation (omega)) (including at least the effects of the (omega)o, f(Ra, [delta]q and alpha terms), rectilinear movements x, y, z, and pivoting gm as defined in the '402 patent"). Accordingly, I decline at this time to set forth the precise language that the Court will use in instructing the jury on the meaning of the claims, and will give the parties an opportunity to submit proposed jury instructions on this matter, consistent with the conclusions set forth in this Decision and Order, closer to the time of trial.

V. Defendants' Motion for Partial Summary Judgment

Defendants allege that certain claims of the '402 patent are invalid because they fail to disclose the "best mode" for practicing the invention as required by 35 U.S.C. s. 112, which provides that a patent specification "shall set forth the best mode contemplated by the inventor of carrying out his invention." "The purpose of the best mode requirement is to ensure that the public, in exchange for the rights given the

inventor under the patent laws, obtains from the inventor a full disclosure of the preferred embodiment of the invention." Dana Corp. v. IPC Ltd. Partnership, 860 F.2d 415, 418 (Fed.Cir.1988), *cert. denied,* 490 U.S. 1067, 109 S.Ct. 2068, 104 L.Ed.2d 633 (1989).

[10] Determining whether a patent satisfies the best mode requirement involves two factual inquiries. First, a factfinder must determine whether at the time the applicant filed an application for a patent, the applicant had a best mode of practicing the invention, *i.e.,* a mode that he considered to be better than any other, which is a subjective determination. The first question, then, "is whether at the time the inventor filed his patent application, he knew of a mode of practicing his claimed invention that he considered to be better than any other. This part of the inquiry is wholly subjective, and resolves whether the inventor must disclose any facts in addition to those sufficient for enablement." Applied Med. Resources Corp. v. U.S. Surgical Corp., 147 F.3d 1374, 1377 (Fed.Cir.1998), *cert. denied,* 525 U.S. 1104, 119 S.Ct. 870, 142 L.Ed.2d 772 (1999).

Second, if the inventor had a best mode of practicing the invention, the factfinder must determine whether the best mode was disclosed in sufficient detail to allow one skilled in the art to practice it, which is an objective determination. United States Gypsum Co. v. National Gypsum Co., 74 F.3d 1209, 1212 (Fed.Cir.1996); Chemcast Corp. v. Arco Indus. Corp., 913 F.2d 923, 927-28 (Fed.Cir.1990). *See* Eli Lilly and Co. v. Barr Labs., Inc., 251 F.3d 955, 963 (Fed.Cir.2001) ("The first prong involves a subjective inquiry, focusing on the inventor's state of mind at the time of filing. The second prong involves an objective inquiry, focusing on the scope of the claimed invention and the level of skill in the art") (citations omitted), *cert. denied,* 534 U.S. 1109, 122 S.Ct. 913, 151 L.Ed.2d 879 (2002).

[T]he second part of the analysis compares what [the inventor] knew with what he disclosed-is the disclosure adequate to enable one skilled in the art to practice the best mode or, in other words, has the inventor 'concealed' his preferred mode from the 'public'? Assessing the adequacy of the disclosure, as opposed to its necessity, is largely an objective inquiry that depends upon the scope of the claimed invention and the level of skill in the art.

Applied Med. Resources, 147 F.3d at 1377 "[T]o satisfy the second inquiry of the best mode test, an inventor need only disclose information about the best mode that would not have been apparent to one of ordinary skill in the art." Young Dental Mfg. Co., Inc. v. Q3 Special Prods., Inc., 112 F.3d 1137, 1143 (Fed.Cir.1997).

The Court of Appeals for the Federal Circuit has also stated that

[w]hether or not a specific disclosure is adequate for best mode purposes is determined by comparing the disclosure with the facts concerning the invention known to the inventor at the time the application was filed. Since there is no objective standard by which to judge the adequacy of a best mode disclosure, only evidence of concealment, whether accidental or intentional, is considered. Compliance with the best mode requirement exists when an inventor discloses his preferred embodiment.

Dana Corp., 860 F.2d at 418.

[11] The defendants bear the burden of showing facts supported by clear and convincing evidence to prove the patent invalid. Nobelpharma AB v. Implant Innovations, Inc., 141 F.3d 1059, 1064 (Fed.Cir.1998). Therefore, "a moving party seeking to invalidate a patent at summary judgment must submit such clear and

convincing evidence of invalidity so that no reasonable jury could find otherwise." Eli Lilly, 251 F.3d at 962. In general, "the best mode issue is one of fact, decided by the jury." Mentor H/S, Inc. v. Medical Device Alliance, Inc., 244 F.3d 1365, 1376 (Fed.Cir.2001).

Defendants' claim that plaintiff failed to disclose the best mode in this case relates to certain claim language in the '402 patent referring to the PTR between the tool and the work gear. *See, e.g.,* '402 Patent (Docket # 87, Ex. A) at col. 29, lines 57, 63-64. During the gear-cutting operation, the tool and work gears are to rotate in a synchronized relationship with one another.This synchronization permits what is known as "continuous indexing." In continuous indexing, all of the gear teeth can be cut with just one plunge of the tool into the work, as opposed to "intermittent indexing," in which the tool must be repeatedly plunged into and pulled out of the work, cutting the teeth one by one.FN4

FN4. Continuous indexing was known and used prior to the invention claimed in the '402 patent. As stated, the chief features of the new machine is its ability to mimic tilt, and its reduction of the number of movable axes and necessary adjustments during the gear-generating process.

In order to effectively perform this continuous-indexing process, the PTR must be maintained at all times. Defendants allege that prior to the filing of plaintiff's patent application on August 24, 1987, the inventors, Ernst J. Hunkeler, Kent D. Yunker, and Robert N. Goldrich (all of whom were Gleason employees) had considered two different designs for a computer unit ("controller") that would control the tool and work gears in order to maintain the PTR, but one of those designs-the design which is disclosed in the '402 patent-had already been rejected by the inventors as inadequate by the time the patent application was filed. In order to understand this allegation, some additional background is necessary.

During the development of the new machine, Gleason had provided specifications for the controller to two potential suppliers, IBH Automation ("IBH") and Cranfield Unit for Precision Engineering ("CUPE"). IBH and CUPE each submitted a design, which differed from each other in some respects.

In both the IBH- and CUPE-designed systems, the work is to be made to rotate in synchronism with the tool. In the IBH design, the work is coordinated with the "commanded" position of the tool. In other words, the computer commands the tool to be in a certain position, and then uses that commanded position as the basis for determining, by means of a mathematical formula, the correct position of the work.

According to defendants, this design proved unsatisfactory in practice, because the physical forces at work on the tool during the gear-cutting operation could cause the *actual* position of the tool to be different from its commanded position. If that happened, the work, which is positioned in response to the commanded tool position, would not be in synchronism with the tool.

The CUPE system, on the other hand, employs a "master/slave" design, in which the work is "slaved" to the actual position of the tool. In this arrangement, the machine determines the actual tool position, then inputs that position into the computer, which calculates, according to a predetermined ratio, the correct position of the work gear. Defendants contend that this system avoided the problems inherent in the IBH "non-slave" design, and that by the time the patent application was filed, the inventors had realized that the CUPE master/slave design was the best mode for accomplishing the continuous indexing process, with the work gear and tool rotated in a predetermined timed relationship. Defendants also contend that the actual machine produced by Gleason utilizes the master/slave system, contrary to the system described in the patent, which

describes a non-slave system.

In response, plaintiff does not contend that the '402 patent actually describes a master/slave design, but asserts that the patent does not require that any particular control system be used. Plaintiff does concede that "[o]ne control system disclosed in the '402 patent is a non-slave design," Gleason's Reply Statement of Material Facts (Docket # 101) at 8, but it insists that the patent's references to "commonplace ... state-of-the-art systems," Patent col. 18, lines 9-10, would teach to one of ordinary skill in the art the alternative use of a master/slave system, since such systems were well known at the time of the patent application.

Furthermore, plaintiff adds, whether a master/slave or some other design was better was simply not important to the inventors at the time of the patent application. Plaintiff states that each of the three inventors is prepared to testify that he did not, as of the date the patent application was filed, have an opinion as to whether a master/slave design was preferable to a non-slave design. *See* Decl. of Ernst J. Hunkeler (Docket # 101) para.para. 3-5; Decl. of Theodore J. Krenzer (Docket # 101) para.para. 3-7; Decl. of Robert N. Goldrich (Docket # 101) para.para. 3-7. What was important, according to the inventors, was maintaining the PTR; the particular type of circuit used to impart and maintain that relationship was not an essential element of the invention. Although there were various references to the use of a master/slave system prior to August 24, 1987, they were mostly a function of Gleason's familiarity with such systems from prior machines, and did not reflect any preference for a master/slave design over a non-slave design.

Plaintiff does not deny that there were problems with the IBH system, and that in time Gleason did come to prefer the CUPE design. Plaintiff contends, however, that the problems with the IBH system had nothing to do with anything claimed in the patent. According to plaintiff, the IBH controller did not perform certain operations at a commercially acceptable level, but those operations were unrelated to the patented invention, and thus have no bearing on the best mode requirement. Plaintiff maintains that the IBH system did work with the claimed invention, but that for unrelated, commercial reasons, Gleason ultimately decided to use the CUPE system.

Plaintiff also argues that there is no evidence that Gleason at any time concealed the use of the master/slave system from the public. Plaintiff notes that when it introduced the new machine to the public in 1988 (under the model name "Phoenix"), Gleason released a paper authored by the inventors entitled "Understanding the Phoenix Universal Bevel and Hypoid Generator." *See* Docket # 101, Ex. H. That paper, among other things, showed the use of a master/slave arrangement. Although this paper was published after the patent application had been filed, plaintiff argues that such post-filing disclosure weighs against a finding of concealment. At any rate, plaintiff asserts, any prior lack of disclosure of more detailed information was simply attributable to Gleason's legitimate desire to keep this important new project under wraps until it was ready to be introduced to the public.

[12] In assessing whether the defendants are entitled to summary judgment, the court must view the evidence "through the prism of the substantive evidentiary burden," Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 254, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986), which in this case is clear and convincing evidence of a best-mode violation. Nobelpharma AB v. Implant Innovations, Inc., 141 F.3d 1059, 1064; Engel Indus., Inc. v. Lockformer Co., 946 F.2d 1528, 1531 (Fed.Cir.1991). I do not believe that defendants have carried that burden, particularly as to the first, subjective prong of the test. Although the '402 patent does not expressly reference the use of a master/slave system, defendants have not proven by clear and convincing evidence, that a non-slave design was preferred by the inventors as the best mode of practicing the claimed invention.

As stated, the first prong of the best-mode analysis is "wholly subjective," Applied Med. Resources, 147 F.3d at 1377, and "[d]etermination of whether the best mode requirement has been met is a question of fact." Engel Indus., 946 F.2d at 1531. That does not, of course, mean that summary judgment on this issue is never appropriate, but it does indicate that the burden on a party moving for summary judgment on this issue is not a light one, particularly where, as here, the inventors affirmatively state that they had no opinion, at the time the patent application was filed (and indeed, have no opinion even today) as to whether a particular mode of practicing the invention was best. *See* Bayer AG v. Schein Pharm., Inc., 301 F.3d 1306, 1319 (Fed.Cir.2002) ("The first prong [of the test for compliance with the best mode requirement] is highly subjective"); *see also* Schumer v. Laboratory Computer Systems, Inc., 308 F.3d 1304, 1315 (Fed.Cir.2002) ("The burden of proving invalidity on summary judgment is high").

I recognize that there is evidence that during the development of the new machine, problems arose with the non-slave, IBH design, and that it was seen that the CUPE master/slave system had certain advantages over the IBH system. Whether these considerations directly related to the use of a master/slave or a non-slave design, however, is in dispute.

If the documentary evidence showed beyond question that the inventors believed that a master/slave system was in fact the best mode for practicing the invention, then they might not be able to create an issue of fact simply by stating otherwise now. The evidence, however, is not so clear in that regard. Hunkeler, for example, states in his declaration that "[a]s an inventor, [he] focused on the mechanics of the machine, not the details of the controller design," and that he "left control issues to others, such as Mr. Yunker, Gleason's control systems engineer." Hunkeler Decl. para.para. 12, 16. He states that his main concern was the maintenance of the PTR, "not how this timed relationship was achieved." *Id*. para. 20. Although some of his internal memos referenced CUPE or master/slave controllers, *see* Docket # 101 Exs. C, D, E, he states that this was simply because Gleason had used CUPE controllers in the past, and Hunkeler assumed that they would do so again. Hunkeler Decl. para.para. 22-24. He also states that although in one memo he referenced the IBH controller's "poor" performance, Ex. C at G014121, that related to problems with the "[q]uality of motors," such as "wrong motor size, bad shafts, loose bearings," and so on, not to the use of a non-slave design. *Id*.

Robert Goldrich, another of the inventors, states that he, too, is prepared to testify under oath that he "do[es] not consider controller design details, such as whether to slave or not slave work rotation, to be essential aspects of the claimed invention." Declaration of Robert N. Goldrich (Docket # 101), para. 3. As an inventor, Goldrich states, he "focused on the mathematics, not the details of the controller design," and he "was only concerned that the work and tool rotate in the conventional predetermined timed relationship for continuous indexing, and not how this timed relationship was achieved." *Id*. para.para. 9, 13.

The third inventor, Kent Yunker, was in charge of the control system development for the new machine. He states that the IBH system was successful at practicing the claimed invention (which he defines as "generating 6-axis pinions of the type conventionally requiring a tilted tool axis by continuously indexing on the E039 FN5 fixture," Yunker Decl. para. 19), and that the "inadequacies of the IBH system ... had nothing to do with the invention covered by the claims at issue ...." Yunker Decl. para. 29. The main reason for preferring the CUPE system, he states, was its "high speed" of operation, not that the master/slave design was better for practicing the claimed invention.

FN5. "E039" was the number assigned to the project which resulted in the development of the new machine.

Certainly there is evidence that Yunker believed that master/slave systems had worked best on some prior machines. In a letter to IBH from Jack Van Elzakker of Gleason dated June 8, 1987, Van Elzakker attached a summary of information that Gleason believed was covered by Gleason's and IBH's confidentiality agreement. Among this information was a statement that "[t]he basis of success on present generators is a master/slave electronic gear box system ...." Docket # 101, Ex. G, Point 2-F.

In a responding letter dated August 17, 1987, IBH's president, W. Herbert White, Jr., stated with respect to Point 2-F that "[t]his is a belief on the part of Gleason and is not a unique idea, therefore this should be removed from the document." Docket # 101, Ex. J.

In comments on White's letter dated August 25, 1987, Yunker stated with respect to Point 2-F, "This is fact not a belief. In external disturbance driven systems the master/slave approach has been the only successfully used system.... This is why we strongly suggested that IBH use this approach during and after our initial discussions on the project. Our implementation of this approach must be treated as proprietary and confidential." Docket # 101, Ex. K.

In his declaration, Yunker states that in this document, he was "referring to systems that preceded the invention of the '402 patent." Yunker Decl. para. 84. He insists that he did not mean that a master/slave system was necessarily the best way of practicing the invention at issue here.

As stated, Yunker's August 25 memo is some evidence that he did prefer a master/slave design, and it may tend to undercut his credibility when he states that he did not. Resolution of this question, however, ultimately does depend in part on an assessment of his credibility, which is a matter properly left for a jury to determine. *See* Reeves v. Sanderson Plumbing Products, Inc., 530 U.S. 133, 150, 120 S.Ct. 2097, 147 L.Ed.2d 105 (2000) ("Credibility determinations, the weighing of the evidence, and the drawing of legitimate inferences from the facts are jury functions, not those of a judge") (quoting Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 255, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986)). Despite the existence of some evidence indicating that there were problems with the IBH system, and that Gleason had previously had success with master/slave controllers, I am not prepared, in the face of the inventors' own sworn statements, to rule as a matter of law that the inventors considered a master/slave system to be "necessary to the operation of the invention." Mentor, 244 F.3d at 1375.

VI. Gleason's Motion to Strike Defendants' Invalidity Defenses or in the Alternative for Partial Summary Judgment on the Issues of Best Mode and Enablement

In addition to opposing defendants' motion for summary judgment of invalidity, plaintiff also moves to strike defendants' invalidity defenses on both the best-mode and enablement issues, or in the alternative for partial summary judgment on those issues. Plaintiff's motion for summary judgment is granted as to enablement, but in all other respects it is denied.

The primary basis for plaintiff's motion is plaintiff's assertion that defendants' best-mode and nonenablement defenses are untimely. Plaintiff contends that defendants never raised these defenses during fact discovery. Plaintiff states that it had no inkling that defendants intended to assert these defenses until, on November 28, 2000, about two months after the close of fact discovery, and one month after the deadline for expert reports on invalidity, plaintiff received a "supplemental report" from defendants' expert, Professor Gosselin, opining

that the best mode of practicing the invention is a master/slave design. Plaintiff states that it heard nothing further from defendants about these defenses until defendants filed their motions for partial summary judgment on August 6, 2001.

Plaintiff contends that this delay is inexcusable, and that plaintiff has been prejudiced by defendants' delay in asserting these defenses. Plaintiff states that had it been aware sooner of defendants' intention to raise these defenses, it would have conducted discovery differently, by, for example, taking steps to preserve the testimony of the inventors, one of whom is in his seventies and living in Arizona. Plaintiff also states that it would have taken testimony of several people from IBH, the manufacturer of the non-slave controller that defendants now claim did not work satisfactorily, as well as third-party discovery of witnesses skilled in the art in 1987, concerning their understanding of the disclosures in the '402 patent. In addition, plaintiff states that it would have waived attorney-client privilege with respect to the preparation of the '402 patent application, because, according to plaintiff, Gleason's communications with its attorneys would have rebutted any claim of concealment.

In the alternative, plaintiff seeks summary judgment on the issues of best mode and enablement. Plaintiff contends that at best, defendants' evidence supports a finding that the IBH, non-slave design failed to perform *non*-claimed operations satisfactorily and that the CUPE controller had performed well with previous, non-claimed operations. Plaintiff asserts that there is no evidence that any inventor subjectively believed that a master/slave design was essential to practice the claimed invention, and that the only design proven to have worked satisfactorily for the claimed invention prior to the patent application was the disclosed, non-slave design of the IBH controller.

In response, defendants state that it is plaintiff's motion to strike that is untimely. Defendants contend that they gave plaintiff fair notice of these defenses at the earliest possible date, and that the only reason that the defenses were not asserted sooner was plaintiff's delay in producing evidence and knowledgeable witnesses. Defendants also assert that if plaintiff intended to move to strike these defenses, it should have done so shortly after the defenses were first raised in November 2000, not eleven months later, after defendants had expended considerable time and money preparing its motion for partial summary judgment.

Based on the evidence presented in support of their own motion for summary judgment, defendants contend that plaintiff's motion with respect to best mode should be denied on the merits as well. Defendants, who, as stated, have withdrawn their motion for summary judgment on enablement, have not responded to plaintiff's motion for summary judgment on that issue.

As to the enablement issue, I will grant plaintiff's motion for partial summary judgment. Section 112 provides that "[t]he specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same ...." This requirement "demands that the patent specification enable 'those skilled in the art to make and use the full scope of the claimed invention without undue experimentation.' " National Recovery Technologies, Inc. v. Magnetic Separation Sys., Inc., 166 F.3d 1190, 1195 (Fed.Cir.1999) (quoting Genentech, Inc. v. Novo Nordisk A/S, 108 F.3d 1361, 1365, 42 USPQ2d 1001, 1004 (Fed.Cir.), *cert. denied,* 522 U.S. 963, 118 S.Ct. 397, 139 L.Ed.2d 310 (1997)) (internal quote omitted).

[14] In withdrawing their motion regarding that issue, defendants state that "it raises a number of questions

of fact that are not appropriate for disposal by summary judgment." Defendants' Reply Brief (Docket # 107), at 1. Defendants, however, have not informed the Court what even one of that "number of questions of fact" might be. In their now-withdrawn motion for summary judgment on this issue, defendants noted only that there was evidence that Gleason had rejected the IBH design as unsatisfactory. While that evidence, which was set forth above in the discussion of the best-mode issue, may show that the IBH controller had certain shortcomings, it does not show that it was so inadequate that one of ordinary skill in the art would have been unable to replicate the claimed invention without undue experimentation. *See* National Recovery Technologies, 166 F.3d at 1196. Since defendants have failed to show the existence of any genuine issue of material fact in this regard, plaintiff's motion for summary judgment on this issue is granted.

The above discussion of defendants' motion for summary judgment on the best-mode issue also demonstrates, though, that there are issues of fact in that regard. In particular, the inventors' subjective beliefs concerning the adequacy of the two competing designs is in dispute, and cannot be determined as a matter of law at this juncture. Plaintiff's motion for summary judgment on that issue is therefore denied.

[15] Plaintiff's motion to strike the best-mode defense is also denied. "A motion to strike an affirmative defense ... is not favored." William Z. Salcer v. Envicon Equities, 744 F.2d 935, 939 (2d Cir.1984), *vacated on other grounds,* 478 U.S. 1015, 106 S.Ct. 3324, 92 L.Ed.2d 731 (1986); Bausch & Lomb, Inc. v. Allergan, Inc., 136 F.Supp.2d 166, 168 (W.D.N.Y.2001). One important factor to consider in deciding whether to grant a motion to strike is prejudice to the moving party, and motions to strike will rarely be granted unless the movant can show that it will be unfairly prejudiced by allowing the assertion of the defense in question. New York v. Solvent Chem. Co., Inc., 218 F.Supp.2d 319, 330 (W.D.N.Y.2002); Metrokane, Inc. v. Wine Enthusiast, 160 F.Supp.2d 633, 641-42 (S.D.N.Y.2001); In re NASDAQ Market-Makers Antitrust Litigation, 164 F.R.D. 346, 350 (S.D.N.Y.1996).

From the evidence presented, I am not convinced either that defendants' assertion of the best-mode defense is untimely, or that plaintiff will be unfairly prejudiced if the motion to strike is denied. While this defense could perhaps have been asserted earlier, it does appear that certain testimony of Kent Yunker, which was not obtained until September 2000, may have had a significant bearing on defendants' assessment of the possible merits of a best-mode defense, and I do not believe from the record before me that defendants were tardy either in obtaining this testimony or in asserting this defense. Furthermore, although plaintiff claims to have been completely taken by surprise at defendants' assertion of a best-mode defense, defendants' discovery requests did suggest that they were at least investigating whether there was a sound basis to move based upon best-mode grounds. And though plaintiff contends that it would have conducted discovery much differently had it been apprised of this defense sooner, plaintiff's vigorous contesting of this issue shows that it has not been unfairly prejudiced, even if the defense was untimely asserted. *See* Nixon v. Life Ins. Co. of North America, 130 F.Supp.2d 1279, 1285 (M.D.Ala.2001) (denying motion to strike where movant failed to show that he was prejudiced by opponent's untimely assertion of defense).

CONCLUSION

Defendants' motion for partial summary judgment of invalidity for best mode violation and nonenablement (Docket # 97) is denied.

Plaintiff's cross-motion to strike defendants' invalidity defenses or in the alternative for partial summary judgment on the issues of best mode and enablement (Docket # 100) is granted in part and denied in part. Plaintiff's motion for summary judgment is granted as to defendants' nonenablement defense. In all other

respects, plaintiff's motion is denied.

With respect to the disputed claim terms of United States Patent No. 4,981,402, those claims are construed as stated in the body of this Decision and Order. At trial, the jury will be instructed on the meaning of those terms consistent with the Court's construction of the terms at issue.

IT IS SO ORDERED.

W.D.N.Y.,2002.
Gleason Works v. Oerlikon Geartec AG

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