United States District Court,
D. Delaware.

CCPI INC,
Plaintiff.
v.
AMERICAN PREMIER, INC,
Defendant.

Civil Action No. 96-446 MMS

Argued March 31, 1997.
Decided June 5, 1997.

Patentee brought action for infringement of patent for impact pad used to absorb force of molten metal in steel production. Following briefing and oral argument devoted to interpretation of claims of patent, the District Court, Murray M. Schwartz, Senior District Judge, held that: (1) phrase "annular inner surface" referred to inner surface, when viewed from above, that surrounds interior space or cavity; (2) "first portion extending inwardly and upwardly" was required to be annular; and (3) phrase "said stream is directed outwardly toward said annular inner surface and then redirected upwardly and inwardly toward the incoming ladle stream" was unambiguous and did not need to be limited in light of prosecution history.

Claims construed.

3,887,171. Cited as prior art.

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OPINION

MURRAY M. SCHWARTZ**, Senior District Judge.**

I. INTRODUCTION

Plaintiff CCPI, Inc. ("CCPI") filed suit against American Premier, Inc. ("API"), alleging infringement of its U.S. Patent No. 5,358,551 ("the '551 patent"). Pursuant to the teachings of Markman v. Westview Instruments, Inc., 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996), the Court scheduled briefing and

oral argument devoted to interpretation of the claims of the '551 patent. The Court's construction of the claims of the '551 patent follows.

II. FACTUAL BACKGROUND

Steel, as used in its myriad shapes and designs, does not occur naturally. It must be cast from molten metal. Casting steel first requires the steel to be melted-at approximately 3,000 degrees Fahrenheit. The molten metal is then placed in a large bucket called a ladle and poured through a ladle shroud, which is a tube with a valve connected to the bottom of the ladle. The ladle shroud is used to control the flow of the molten metal. The metal drops through the ladle shroud into a large vat called a tundish, then splashes throughout the tundish before eventually draining into a casting mold through one or more outlets located on the bottom of the tundish.

For obvious reasons, not many materials can withstand a torrent of liquefied metal. So, too, the lining of the tundish, when battered by the flow of molten metal, quickly corrodes. Recognizing this, steel manufacturers developed an impact pad which, when placed in the tundish, would absorb the brunt of the force of liquefied metal streaming down through the ladle shroud. The impact pad is referred to as a refractory composition, which essentially means that it is made of material more resistant to coursing molten metal than the material which comprises the tundish.

The impact pad is not used merely to endure a heavy pounding. It is also designed to reduce turbulence in the tundish by controlling the stream of molten metal. Turbulence and high velocity flow within the tundish is undesirable, mostly because it disrupts the slag, a layer of metal impurities and by-product, which forms atop the molten metal. When the slag is unsettled, impurities disperse into the molten metal and eventually into the cast, reducing the quality of the steel. Another danger is "bugging," which occurs when the metal, while still turbulent, drains through the tundish into the casting mold. Finally, high velocity flow can lead to "short circuiting," which refers to when a stream of molten metal takes a direct path from the ladle shroud to the outlet and down into the cast; it appears as the "circuit" gets "shorter," impurities have less time and opportunity to dissipate throughout the bath and float up to the slag. Again, as the steel becomes less pure, its value plummets.

Impact pads are certainly not novel; in fact, it seems they date back to at least 1975. Rather, it is their design and efficacy which have changed, and these improvements are at the crux of the litigation before this Court. In 1994, the '551 patent-entitled "Turbulence Inhibiting Tundish and Impact Pad and Method of Using"-issued to CCPI. Predictably, CCPI and API have divergent perspectives of the technology of the '551 patent. CCPI heralds it as "the radical and revolutionary concept of using a fully-enclosed impact pad." Docket Item ("D.I.") 52 at 9, lines ("ll.") 2-4. API, on the other hand, takes a considerably dimmer view of the '551 patent, especially as it applies to the allegedly infringing design of an impact pad it plans to market.

III. DISCUSSION

A. The General Principles of Claim Construction

The '551 patent contains twenty-one claims. The parties are jousting over the meaning of two separate phrases which appear in each of these claims. Claim 1 of the '551 patent describes, FN1 with the terms at issue in italics:

FN1. Claims 1, 11, and 21 of the '551 patent are independent claims. The two phrases at issue-"annular inner

surface having at least a first portion extending inwardly and upwardly" and "said stream is directed outwardly toward said annular inner surface and then redirected upwardly and inwardly ..."-are present in each of the independent claims. Accordingly, for claim construction purposes, claim 1 is representative of all of the claims of the '551 patent.

A tundish impact pad formed from a refractory composition capable of withstanding continuous contact with molten metal, said pad comprising a base having an impact surface and an endless outer side wall extending upwardly therefrom and fully enclosing an interior space having an upper opening for receiving a stream of said molten metal, said outer wall including an *annular inner surface having at least a first portion extending inwardly and upwardly* toward said opening, whereby when a downwardly directed stream of molten metal from a ladle outlet disposed above said impact pad strikes said impact surface, *said stream is directed outwardly toward said annular inner surface and then redirected upwardly and inwardly toward the incoming ladle stream*.
D.I. 36 at Exhibit ("Exh.") A, column ("col.") 7, ll. 45-59 (emphasis added).
There are two steps in determining whether a patent has been infringed. First, the asserted claims of the patent must be construed to determine their meaning and scope. Second, there must be a comparison between the claims as construed and the accused device or process. Serrano v. Telular Corp., 111 F.3d 1578, 1582 (Fed.Cir.1997); Glaxo, Inc. v. Novopharm, Ltd., 110 F.3d 1562, 1565 (Fed.Cir.1997); ADC Telecomm., Inc. v. Siecor Corp., 954 F.Supp. 820, 827 (D.Del.1997). The court performs the first step-claim construction. Eastman Kodak Co. v. Goodyear Tire & Rubber Co., 114 F.3d 1547, 1552 (Fed.Cir.1997); ADC Telecomm., 954 F.Supp. at 827.

[1] [2] [3] In construing a claim, a court is to "look first to the intrinsic evidence of record, i.e., the patent itself, including the claims, the specification, and if in evidence, the prosecution history." CVI/Beta Ventures,Inc. v. Tura LP, 112 F.3d 1146, 1152 (Fed.Cir.1997) (quoting Vitronics Corp. v. Conceptronic Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996)); ADC Telecomm., 954 F.Supp. at 827. The claim language itself is of paramount importance, of course, and a "construing court does not accord the specification, prosecution history, and other relevant evidence the same weight as the claims themselves, but consults these sources to give the necessary context to the claim language." Eastman Kodak Co., 114 F.3d at 1552, 1997 WL 261364, at *3. The patent specification-often the "single best guide to the meaning of a disputed term"-can be used "to determine whether the inventor has used any terms in a manner inconsistentwith their ordinary meaning." Vitronics, 90 F.3d at 1582. The prosecution history is also relevant and may "limit[ ] the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution." CVI/Beta Ventures, Inc., 112 F.3d at 1155 (quoting Southwall Techs., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1579 (Fed.Cir.), *cert. denied,* 516 U.S. 987, 116 S.Ct. 515, 133 L.Ed.2d 424 (1995)).

[4] Finally, at the bottom rung of the claim construction ladder is extrinsic evidence. Extrinsic evidence, such as expert testimony or the testimony of the inventor, is useful only if the intrinsic evidence does not settle all ambiguity in the disputed claim term. CVI/Beta Ventures, Inc., 112 F.3d at 1152-53. In other words, if the intrinsic evidence "unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper." FN2 Vitronics, 90 F.3d at 1583.

FN2. The Federal Circuit Court of Appeals has explained the slight regard accorded extrinsic evidence succinctly:
The claims, specification, and file history, rather than extrinsic evidence, constitute the public record of the patentee's claim, a record on which the public is entitled to rely. In other words, competitors are entitled to

review the public record, apply the established rules of claim construction, ascertain the scope of the patentee's claimed invention, and, thus, design around the claimed invention. Allowing the public record to be altered or changed by extrinsic evidence introduced at trial, such as expert testimony, would make this right meaningless.

Vitronics, 90 F.3d at 1583.
API has placed two phrases contained in Claim 1 at issue.FN3 With the foregoing principles in mind, the Court turns to the construction of those two phrases.

FN3. *See supra* note 1.

B. "Annular Inner Surface Having At Least A First Portion Extending Inwardly and Upwardly"

Claim 1 recites an impact pad with an outer wall including an "annular inner surface having at least a first portion extending inwardly and upwardly" toward the opening at the top of the impact pad. D.I. 36 at Exh. A, col. 7, ll. 51-53. There are two subsidiary disagreements regarding this phrase. First, the parties differ over the meaning of an "annular inner surface," despite an explicit definition provided for "annular" in the specification. Second, API and CCPI diverge on whether the "first portion" of the impact pad must itself be annular.

1. "Annular Inner Surface"

[5] Both sides agree on what an "inner surface" is for purposes of the '551 patent; their dispute centers on the meaning of "annular." Fortunately, the specification provides some guidance. Annular, as used in the '551 patent, is "*not meant to denote any particular shape but is meant to indicate a fully enclosing, endless boundary structure*." FN4 D.I. 36 at Exh. A, col. 3, ll. 7-10 (emphasis added). API contends the word "endless," as used to define "annular," is ambiguous and this vagary, by implication, clouds the meaning of "annular." "Endless" should be defined, urges API, just as the inventor of the '551 patent, Karl J. Saylor, coined it; that is, "endless" means "without a definite beginning or ending." FN5 D.I. 37 at Exh. 4, p. 375.

FN4. "Annular" is ordinarily defined as "of or relating to a ring: forming a ring: shaped like a ring." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 88 (1971). The Court is not bound by this definition, of course, as "a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the file history." Vitronics, 90 F.3d at 1582.

FN5. The Court recognizes this is extrinsic evidence; given the disposition of this issue, however, the nature of this evidence is trivial.

Extrapolating from its definition of "endless," API suggests "annular" should be redefined to signify "a fully enclosing, endless boundary structure without a definite beginning or ending." D.I. 37 at 1. While this may seem mere semantic quibbling, API's true motivation is revealed in the inference it draws from its proposed definition. According to API, a structure without a definite beginning or ending is "without surface discontinuities." D.I. 48 at 2. In other words, API interprets "endless" to limit the meaning of an "annular

inner surface" to an inner surface that is "continuous" and is "not interrupted by intermediate structures." *Id*. CCPI, on the other hand, does not cavil about "endless"; it simply argues an "annular inner surface" can be any shape, so long as, when viewed from above, it surrounds an inner space or cavity.

API's most powerful argument in support of its interpretation is that CCPI's reading elides the word "endless" from the definition of "annular." To reiterate, "annular" indicates "a fully enclosing, endless boundary structure." D.I. 36 at col. 3, ll. 7-10. Requiring an annular structure merely to surround an interior space when viewed from above, API contends, ascribes to "endless" the same meaning as the phrase that immediately precedes it-"fully enclosing." FN6 API points to the specification statement "[a]ny geometric shape which fully encloses or defines an[ ] endless boundary" will suffice under the '551 patent. Id. at col. 7, ll. 34-39. According to API, this disparate use of "fully enclose" and "endless" illustrates "fully enclosing" and "endless" cannot have the same meaning. API's proposal, it submits, does not make "endless" surplusage; as API puts it, its interpretation "breathes life and meaning into the term 'endless.' " D.I. 48 at 2.

FN6. Of course, "fully enclosing" does not mean the impact pad has no ingress or egress for the stream of molten metal; otherwise, the impact pad would be useless. Rather, the specification and patent makes clear that a "fully enclosing" structure is one which, when viewed from above, surrounds an interior space or cavity. *See, e.g.,* D.I. 36 at Exh. A, col. 5, ll. 1-6; col. 7, ll. 2-7.

The short answer to this is API wants to resuscitate a term that already has too much animation and too many uses; "endless," as strewn haphazardly throughout the '551 patent and its prosecution history, seems to mean many things, yet nothing, and certainly not the limiting effect API gives it. For example, in the summary of the invention, the specification describes an "endless annular side wall" of the impact pad. D.I. 36 at Exh. A, col. 2, ll. 53, 57. The use of "endless" there is tautological, of course, since an annular wall is, by the specification definition, "endless." The pad is later described as including "an endless annular ... outer side wall having an annular ... inner wall surface...." Id. at col. 6, ll. 2-4. Again, for the same reason, "endless" becomes so much wasted typeface. Finally, in the file wrapper, CCPI stated, "While the impact pad of the present invention may be formed with different shapes when viewed from above, in each case there is an *endless side wall, or, in other words, a sidewall which surrounds an interior space or volume of the pad*." D.I. 36 at Exh. C., p. 56 (emphasis added). According to CCPI, this statement shows "endless" was employed as a synonym for "fully enclosing."

This indiscriminate use of "endless" FN7 only serves to highlight the principal flaw in API's position: API attributes limitations to the claims from a word found nowhere in the claim itself, but only as subsumed in "annular." When the claims are examined in conjunction with the specification and prosecution history, the limitations API would impose-no discontinuities or intermediate structures on the inner surface-cannot be found; they cannot be discerned in "endless" as it hopscotches throughout the specification and they cannot be imputed to the broader definition of "annular inner surface." As noted earlier, the specification repeatedly disavows the notion "annular" is meant to denote a particular shape. *See* D.I. 36 at col. 3, ll. 7-10. Indeed:

FN7. "Endless" appears nine times in the specification; five times in connection with the "annular side wall" (which can be the outer or inner wall of the impact pad), *see* D.I. 36 at Exh. A, col. 2, ll. 49, 53, 56-57; col. 3, l. 6; col. 5, l. 66; twice as a description of the outer side wall (once in connection with the "annular" outer side wall), id, at col. 5, ll. 1-2; col. 6, ll. 2-3; once, of course, in the definition of "annular" itself, id. at col. 3, l. 9; and once to describe a "boundary for an interior space of the pad[,]" id. at col. 7, ll. 35-36.

[W]hile the impact pad of the present invention is preferably circularly shaped and while one alternative shape has also been shown and described [a rectangle], *many shapes for the side walls of the impact pad are possible and fall within the scope of the present invention. Any geometric shape* which fully encloses or defines an[ ] endless boundary for an interior space of the pad and redirects the incoming molten metal flow back into itself and creates a flow pattern away from the ladle shroud *will perform similarly to the illustrated embodiments*.
D.I. 36 at col. 7, ll. 29-39 (emphasis added). API's definition would run contrary to these teachings; it would limit the shape of the walls of the impact pad. Accordingly, it is unnecessary to define "endless"; it does not disturb the meaning of "annular."
Even if the Court defined "endless" in accordance with its usual meaning, i.e., without an end,FN8 this definition would not engender API's proposed limitations on the shape of "annular inner surface." To elaborate, one can trace with a pencil an outline of a circle or rectangle-which are the preferred embodiments of the inner surfaces of the '551 impact pads when viewed from above, *see* D.I. 36 at Figures 3-5-and API concedes this outline is "endless," or "without a definite ending." API seems to argue the inner surface fails to qualify as "endless" as soon as an irregular portion of the inner surface protrudes into the interior cavity of the pad; for example, API presumably characterizes the inner surface of an impact pad, when viewed from above, that forms a square with a triangular protrusion in each corner as lacking an "endless" quality. But this assertion is misplaced. First, as rehearsed earlier, the specification allows for any shape. Second, a continuous outline can be traced along such an inner surface-the pencil never reaches an ending point-despite the surface irregularity.

FN8. This differs from API's proposed definition of "without a definite beginning or ending."

Accordingly, the Court concludes CCPI's definition of "annular inner surface" is correct; that is, so long as an inner surface, when viewed from above, surrounds an interior space or cavity, that surface will be considered "annular."

2. "First Portion Extending Inwardly and Upwardly"

[6] At oral argument, the parties added a new wrinkle to their dispute: regardless of the interpretation of "annular," the parties also disagree as to whether the first portion of the annular inner surface which extends inwardly and upwardly must itself be "annular." *See* D.I. 52 at 117, ll. 18-20. Or, put another way, the Court must decide whether "annular" modifies "first portion" as well as "inner surface" in the claims.FN9 Id. API contends the first portion must be annular, while CCPI maintains the first portion need not be annular so long as it extends upwardly and inwardly toward the opening of the impact pad and achieves the other functional elements of the claim.

FN9. To reiterate, claim 1 recites:
A tundish impact pad formed from a refractory composition capable of withstanding continuous contact with molten metal, said pad comprising a base having an impact surface and an endless outer side wall extending upwardly therefrom and fully enclosing an interior space having an upper opening for receiving a stream of said molten metal, said outer wall including an *annular inner surface having at least a first portion extending inwardly and upwardly toward said opening,* whereby when a downwardly directed stream of molten metal from a ladle outlet disposed above said impact pad strikes said impact surface, said

stream is directed outwardly toward said annular inner surface and then redirected upwardly and inwardly toward the incoming ladle stream.

D.I. 36 at Exh. A, col. 7, ll. 45-60 (emphasis added).

(a) Claim language

Claim interpretation begins, of course, with the claim language itself. Eastman Kodak Co., 114 F.3d at 1552. The word "portion" has an ordinary and well-recognized meaning.FN10 The most natural reading of the claim supports the view the first portion must itself be annular. In common parlance, a portion most often possesses the attributes of the whole.FN11 Nevertheless, the Court recognizes there are instances this may not be true. Accordingly, resort to the specification is necessary to give context to the claim language.

FN10. Portion is defined as "a part of a whole." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1768 (1971). The Federal Circuit Court of Appeals has characterized dictionaries as a higher species of extrinsic evidence, with the caveat that 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 a reading of the patent documents." Vitronics, 90 F.3d at 1584 n. 6. *See also* Eastman Kodak, 114 F.3d at ----, 1997 WL 261364, at *3 (employing dictionary in claim construction).

FN11. For example, consider the following statement: There is a wooded park, having a portion extending into the lake. It is clear in this instance the portion which extends into the lake must itself be wooded.

(b) Specification FN12

FN12. As the Court observed earlier, this *Markman* issue did not crystallize until the twilight of a three hour and fifteen minute hearing. The issue received only a passing mention in the briefs. Neither party disclosed any evidence in the prosecution history or extrinsic evidence which would provide insight into whether the first portion must itself be annular. The Court conducted its own inquiry but could find nothing significant in the prosecution history on the subject.

The specification states "[o]ne *annular portion* of the inner side wall surface curves outwardly and upwardly" from the base of the impact pad "and meets *another annular portion* which curves concavely inwardly and upwardly to a vertical inner wall surface." D.I. 36 at Exh. A, col. 5, ll. 6-11 (emphasis added; references to figures depicted in patent omitted). A little later, the specification describes "one or both of the *annular surface portions* " as potentially "flat and angled outwardly and inwardly, respectively, instead of curved[,]" and states, "Each of these alternative designs still includes an *annular side wall inner surface portion* extending inwardly and upwardly toward the opening [of the impact pad] to create the desired flow pattern described herein." *Id*. at col. 5, ll. 16-25 (emphasis added). Every one of the preferred embodiments displays a fully enclosing portion that extends upwardly and inwardly.FN13 *See id*. at Figures ("Fig.") 1-6. Finally, as noted earlier, there is a declaration in the specification that "[a]ny geometric shape which fully encloses or defines and [sic] endless boundary [i.e., is annular] for an interior space of the pad and redirects the incoming molten metal flow back into itself ... will perform similarly to the illustrated embodiments." *Id*. at col. 7, ll. 34-39. Each of these references, then, describes the portion of the inner surface which extends upwardly and inwardly as annular.

FN13. Both parties agree "annular" means, at minimum, fully enclosing.

CCPI tries to spin this seemingly damaging language to its own benefit. According to CCPI, these references show CCPI recognized its ability to use the word "annular" when it so desired; in the claims, it chose not to modify "first portion" with "annular." Therefore, CCPI asserts, the "annular" limitation of "first portion" in the specification should not be read into the claim.

There is a fine line between the use of the specification to clarify otherwise cloudy terms in the claim and the extraction of limitations from the specification to impose those limitations on the claims. The first is encouraged, the latter impermissible. CVI/Beta Ventures, Inc., 112 F.3d at 1158 ("[A]s a general matter, the claims of a patent are not limited by preferred embodiments."); Electro Med. Sys., S.A. v. Cooper Life Sciences, Inc., 34 F.3d 1048, 1054 (Fed.Cir.1994) ("[C]laims are not to be interpreted by adding limitations appearing only in the specification."); In re Van Geuns, 988 F.2d 1181, 1184 (Fed.Cir.1993) ("[L]imitations are not to be read into the claims from the specification.") Intervet Am., Inc. v. Kee-Vet Labs., Inc., 887 F.2d 1050, 1053 (Fed.Cir.1989) ("[L] imitations appearing in the specification will not be read into claims, and ... interpreting what is meant by a word in a claim is not to be confused with adding an extraneous limitation appearing in the specification[.] ..."); Fonar Corp. v. Johnson & Johnson, 821 F.2d 627, 632 (Fed.Cir.1987) (using specification to interpret ambiguous term in claim); Roll Sys., Inc. v. Wallace Computer Services, Inc., 901 F.Supp. 389, 392 (D.Mass.1995) (quoting above language from *Intervet* court).

This is an instance when a claim term-specifically, "portion"-is ambiguous, and the specification implies a meaning other than the one urged by CCPI. Each reference in the specification reinforces the most natural reading of the claim. Accordingly, the specification is not being used to import an extraneous limitation to the claims; instead, it is used to hone the meaning of murky language already in the claims.

The Court concludes, therefore, the "first portion extending inwardly and upwardly," as that term is used in the '551 patent, must itself be annular.

C. "Said Stream is Directed Outwardly Toward Said Annular Inner Surface and then Redirected Upwardly and Inwardly Toward the Incoming Ladle Stream."

[7] Claim 1, in part, describes the structure of CCPI's impact pad with regard to its function; that is the '551 patent claims an impact pad with a structure whereby the falling stream of molten metal from the ladle shroud is "directed outwardly toward [the] annular inner surface [of the impact pad] and then redirected upwardly and inwardly toward the incoming ladle stream." D.I. 36 at Exh. A, col. 7, ll. 56-59. CCPI maintains this language is unambiguous-it means what it says. API concedes none of the words at issue here are vague or nebulous, as they are used in common parlance. But API argues when the impact pad is observed while in use, the language is hopelessly indefinite. API has thus proposed its own interpretation: the "downwardly directed stream of molten metal" must be "redirected back into itself in an upward direction to create two opposed vertical streams or counter current flows in and above the pad which interact with each other to such a degree that they significantly slow each other down." D.I. 37 at 5.

1. Claim language

As noted earlier, the first consideration is the claim language itself and, specifically, whether it is ambiguous. *See* Eastman Kodak Co., 114 F.3d at 1552. In its briefing, API urged the entire phrase "directed

outwardly *toward* [the] annular inner surface [of the impact pad] and then redirected upwardly and inwardly *toward* the incoming ladle stream" was ambiguous. When pressed at oral argument, counsel for API narrowed its position somewhat; API now contends use of the word "toward" is unclear. API does not argue the language itself is ambiguous. Rather, API submits the way the impact pad affects the flow of molten metal makes it impossible to determine if the molten metal is redirected toward the incoming ladle stream; thus, according to API, "toward" is ambiguous.

API has introduced a videotaped demonstration of the '551 impact pad at work FN14 and the testimony of the inventor, Karl J. Saylor in an effort to show the flow pattern of the metal after it enters the impact pad makes it is impossible for anyone-Saylor included-to determine when the stream of molten metal is "directed outwardly toward [the] annular inner surface and then redirected upwardly and inwardly toward the incoming ladle stream." In fact, API argues, the stream has no discernable "direction" at all; it resembles a cloud which disperses throughout the impact pad.

FN14. Water was used in the demonstration instead of molten metal.

As CCPI points out, API is trying to create ambiguity in the claim language with the use of extrinsic evidence. This is a formidable obstacle in itself, but API's more pressing barrier is that its argument is more appropriately characterized as an indirect attack on the validity of the '551 patent. As the Federal Circuit Court of Appeals has cautioned, "[a]mbiguity, undue breadth, vagueness, and triviality are matters which go to claim validity for failure to comply with 35 U.S.C. s. 112-para. 2, not to interpretation or construction." FN15 Intervet Am., Inc., 887 F.2d at 1053; *see also* Markman v. Westview Instr., Inc., 52 F.3d 967, 986 (Fed.Cir.1995), *aff'd,* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996).

FN15. 35 U.S.C. s. 112, para. 2 states: "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."

"Toward," although not defined in the '551 patent, has an ordinary and well-recognized meaning. "Toward" is commonly defined as "in the direction of: to a point approaching." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 2417 (1971).FN16 While it may be difficult-and API suggests it is well-nigh impossible-to determine the direction taken by the stream of molten metal after it strikes the impact pad of the '551 patent, this consideration goes to validity, and is best left for another day. For now, it is sufficient to describe the claim language as clear and unambiguous; it means precisely what it says.

FN16. *See supra* note 10.

2. Specification

As rehearsed above, the language in the claim is lucid; nevertheless, the Court examines the specification to see if CCPI, acting as its own lexicographer, defined the terms at issue in any manner inconsistent with their common usage. API points to various passages in the specification to support its proposed interpretation. For example, in the invention summary, the patent states "the incoming stream is redirected back into itself and a flow pattern is created which directs the reversed flow of metal away from the ladle shroud." D.I. 36

at Exh. A, col. 2, ll. 56-61. Similar statements are scattered throughout the specification.FN17

FN17. For example, column three, lines 21-26 of the patent state: "[A] pad constructed in accordance with the present invention redirects the pouring stream back into itself causing the counter current flows to slow each other down thereby minimizing turbulence and inhibiting high velocity flow within the tundish." Further: "The vertical upward movement of the stream caused by the tundish pad significantly slows down the stream of molten metal as the two opposed vertical streams have a partially cancelling effect on one another." D.I. 36 at Exh. A, col. 5, ll. 44-48. Still further: "It will thus be appreciated that the tundish impact pads of the present invention cause the incoming ladle stream to be completely reversed in an upward direction thus significantly slowing the stream and preventing undesirable high velocity flows and turbulence within the tundish." Id. at col. 6, ll. 29-34. Finally: "Any geometric shape which fully encloses or defines and [sic] endless boundary for an interior space of the pad and redirects the incoming molten metal flow back into itself and creates a flow pattern away from the ladle shroud will perform similarly to the illustrated embodiments." Id. at col. 7, ll. 34-39.

This again presents the tightrope the Court traversed in section III(B)(2) of this opinion. On one hand, courts are encouraged to use the specification to provide appropriate context for the claims. On the other hand, courts are dissuaded from adding to claims those limitations that appear only in the specification. API cloaks its appeal in the raiments of using the specification to interpret; when laid bare, however, it is a plea for a limitation not found in the claims. As noted earlier, there is nothing murky in the language and the Court cannot consider issues such as ambiguity or vagueness which relate to claim validity during claim construction. *See* Markman, 52 F.3d at 986; Intervet Am., Inc., 887 F.2d at 1053.

3. Prosecution history (or file wrapper)

[8] Although the claim language is clear, API exhorts the Court to scrutinize the prosecution history. A patent owner cannot take a position about a claim term during litigation that is inconsistent with the position it took during prosecution; statements made during prosecution may commit the patent owner to a particular meaning for a patent term. CVI/Beta Ventures, Inc., 112 F.3d at 1158-59. Extrapolating from this tenet of claim construction, API argues CCPI limited its claims-to an impact pad that reversed a falling stream of molten metal back into itself-in an effort to gain approval from the Patent Examiner ("the Examiner").

CCPI originally submitted claim 1 without a functional description. FN18 Again, as stated earlier, the idea of an impact pad was nothing new, and the Examiner disallowed each of the product claims FN19 under 35 U.S.C. s. 103 as being unpatentable over a prior art patent, U.S. Patent No. 3,887,171 (referred to as "the Neuhaus patent," after its inventor) in view of another patent, U.S. Patent No. 5,169,591 (called "the Schmidt patent" after one of its inventors).FN20 D.I. 36 at Exh. C, p. 44.

FN18. In other words, claim 1, as originally submitted, disclosed:
A tundish impact pad formed from a refractory composition capable of withstanding continuous contact with molten metal, said pad comprising a base having an impact surface and an endless outer side wall extending upwardly therefrom and fully enclosing an interior space having an upper opening for receiving a stream of said molten metal, said outer wall including an annular inner surface having at least a first portion extending inwardly and upwardly toward said opening.

D.I. 36 at Exh. C, p. 32. The next phrase, "whereby when a downwardly directed stream of molten metal from a ladle outlet disposed above said impact pad strikes said impact surface, said stream is directed outwardly toward said annular inner surface and then redirected upwardly and inwardly toward the incoming ladle stream[,]" was not added to the claim until after it had been rejected.

FN19. Claims 1 through 20 are directed to the impact pad itself, while claim 21 is directed to the method of preventing turbulence. Claim 21 was the only claim not rejected by the Examiner under 35 U.S.C. s. 103 as unpatentable over the Neuhaus patent in light of the Schmidt patent.

FN20. 35 U.S.C. s. 103(a) states:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title [governing conditions for patentability], if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

The Examiner also rejected each of the claims as anticipated by the Schmidt patent. The prosecution history does not reveal anything damning to CCPI's position here in comparison to the arguments it presented to the Examiner to distinguish the '551 patent from the Schmidt patent. D.I. 36 at Exh. C, pp. 60-62. Therefore, the Court limits its consideration to the arguments made by CCPI to distinguish the Neuhaus patent in view of the Schmidt patent.

The Schmidt patent, which issued in 1992, disclosed a horseshoe-shaped impact pad with an aperture aimed directly toward the outlet at the bottom of the tundish.FN21 *See* D.I. 49 at Exh. A. This design differs from the design of the impact pad of the '551 patent; the impact pad of the '551 pad is fully enclosed,FN22 as opposed to shaped like a horseshoe, and the only means of egress from the impact pad for the molten metal is through an opening located at the top of the impact pad. Similar to the '551 patent, the Schmidt impact pad had an upward and inward slope along its inner surface for "receiving and reversing the direction of the radiating fluid flow generated by an incoming ladle stream." Id. at col. 2, ll. 18-20.

FN21. In an effort to ease comprehension, the Court has used the terminology of the '551 patent to describe the commensurate functional components of the Schmidt and Neuhaus patents.

FN22. *See supra* note 6.

The Neuhaus patent, which issued in 1975, also disclosed a horseshoe-shaped impact pad. D.I. 37 at Exh. 7. Similar to the '551 patent (but unlike the Schmidt patent), the flow from the Neuhaus impact pad was aimed toward the ladle shroud above it so the flow of molten metal would not drain directly into the tundish outlets. From the sketches in the Neuhaus patent, it appears the ladle shroud extended into the horseshoe-shaped impact pad; the ladle shroud in the '551 patent, on the other hand, does not descend into the area fully enclosed by the impact pad. Finally, unlike in Schmidt or the '551 patent, the inner surface of the impact pad in Neuhaus did not possess an upward and inward slope.

CCPI tried to remedy the flaws in its spumed claims by adding the following functional description of the impact pad: "whereby when a downwardly directed stream of molten metal from a ladle outlet disposed

above said impact pad strikes said impact surface, said stream is directed outwardly toward said annular inner surface and then redirected upwardly and inwardly toward the incoming ladle stream." D.I. 36 at Exh. C, p. 54. It is in this amendment, and in the statements CCPI made to accompany this amendment, that API finds the limitations it proposes for the impact pad-that is, it must redirect the stream of molten metal "back into itself ... to create two opposed vertical streams of counter current flows in and above the pad which interact with each other to such a degree that they are significantly slowed down." D.I. 37 at 5.

First, as API points out, in a summary of the invention included in the amendments, CCPI stated the "end result" of the structure of the impact pad was that "flow velocities of molten metal exiting the interior volume of the pad are significantly slowed down by the cancelling effect of the incoming ladle stream." Id. at 57. Contrary to API's arguments, however, this statement does not reveal a disavowal by CCPI of a broader claim interpretation, nor does it limit the claim. It simply describes, in a general fashion, a function of the impact pad.

API's best argument is rooted in the statements made by CCPI to distinguish the impact pad of the Neuhaus patent. CCPI stated that an "upward and inward" portion on the inner surface of the Neuhaus impact pad, like the one on the impact pad of the '551 patent, would escalate turbulence. Turbulence would increase, CCPI argued, because the flow of molten metal would collide with the ladle shroud, which descended into the enclosed interior area of the impact pad itself. API derives from this a statement never explicitly made by CCPI: the Neuhaus patent is distinguishable from the '551 patent because, unlike the '551 patent, the ladle shroud in the Neuhaus patent blocks the ability of the outgoing and incoming streams to interact and slow each other down. Only after this supposed advantage was pressed to the Examiner, argues API, was approval of the '551 patent given.

While this contention has its appeal, it is unavailing. The above statement, when read in context with the other arguments made by CCPI in support of its amended claims, reveals CCPI simply reiterated many of the distinguishing features of the '551 patent that failed to sway the Examiner at the initial hearing.FN23 CCPI did not limit itself to an impact pad that functions in the manner API suggests. CCPI has not taken a position in this litigation that is inconsistent with the position it took during prosecution of the '551 patent. Put bluntly, the key phrases API wants to use to limit the claims-"back into itself" and "significantly slow each other down"-are nowhere to be found in the arguments CCPI made to win approval from the Examiner. At bottom, then, API's arguments about the prosecution history are simply another attempt to interpolate limits onto claim language that API may feel is hopelessly obscure in practice, but is plain on its face.

FN23. The full argument presented by CCPI to the Examiner that the amended application should not be rejected as anticipated by the Neuhaus patent in view of the Schmidt patent is as follows:
As further pointed out and agreed to by the Examiner at the interview, there is no suggestion in either the Neuhaus or Schmidt et al. patents for combining them in such a way as to lead to the present invention. In the Office Action the Examiner apparently suggests that the Schmidt et al. disclosure would lead one of ordinary skill in the art to place an undercut portion on the trough of Neuhaus to avoid "excessive turbulence." However, there is absolutely no suggestion in the prior art that an undercut portion on the trough [now, the impact pad] of Neuhaus would lessen turbulence. In fact, an undercut portion on the trough of Neuhaus is more likely to increase turbulence by causing flow to impact against the outlet tube [now, the ladle shroud]. In any event, the use of an undercut portion on the trough of Neuhaus would be in direct contradiction to the teachings of Neuhaus himself since the slow outward flow would be inhibited by an undercut portion on the trough. In short, there is no teaching or suggestion for combining the Neuhaus and

Schmidt et al. patents under any rationale to come up with the pad of the present invention. Applicant therefore respectfully requests that this rejection be withdrawn by the Examiner.

D.I. 36 at Exh. C, pp. 63-64.
Accordingly, the Court declines the invitation to tinker with the phrase "said stream is directed outwardly toward said annular inner surface and then redirected upwardly and inwardly toward the incoming ladle stream." The language is plain, and it means what it says.FN24

FN24. Because the intrinsic evidence unambiguously describes the scope of the patented invention, the Court need not address the extrinsic evidence submitted by API, namely Saylor's deposition testimony. *See* Vitronics, 90 F.3d at 1583.

IV. SUMMARY

The parties have presented three phrases in the claims of the '551 patent that required interpretation. First, the parties quarreled over the meaning of "annular inner surface"; the Court has concluded an inner surface, when viewed from above, that surrounds an interior space or cavity is "annular."

Second, the parties differed as to whether the "first portion" of the annular inner surface which extends inwardly and upwardly must itself be annular. The Court has concluded it must.

Finally, API has argued the phrase "said stream is directed outwardly toward said annular inner surface and then redirected upwardlyand inwardly toward the incoming ladle stream" is ambiguous and needs to be limited. The Court has concluded this phrase is lucid and need not be limited in the way API suggests.

D.Del.,1997.
CCPI Inc. v. American Premier, Inc.