United States District Court,
W.D. Pennsylvania.

The SOLLAMI COMPANY,
Plaintiff.
v.
KENNAMETAL INC,
Defendant.

Aug. 29, 2006.

Jeffrey T. Morris, The Cook Law Group, P.C., Pittsburgh, PA, for Plaintiff.

Alan G. Towner, Eric G. Soller, Pietragallo, Bosick & Gordon, Pittsburgh, PA, for Defendant.

SPECIAL MASTER'S REPORT AND RECOMMENDATIONS TO THE COURT CONCERNING CLAIM CONSTRUCTION

JOHN K. WILLIAMSON, Judge.

Background

By order of the court dated April 19th, 2006, I was appointed Special Master for the purpose of submitting recommendations to the court on the issue of patent claim construction. This report contains my recommendations regarding construction of disputed claim terms in the patents involved in this suit.

The patents in suit are United States Patent Nos. 6,585,326 B2 ("the ' 326 patent"), 6,371,567 B1 ("the '567 patent"), and 6,585,327 B2 ("the '327 patent"). These patents describe cutting tool attachments for road construction and mining equipment. Disputed claim terms are contained in claims 1-15 of the '326 patent, claims 1-7 of the '567 patent, and claim 8 of the '327 patent. The disputed terms are set out in a 118 page Joint Disputed Claim Terms Chart which was submitted to the court by the parties (a copy of which is attached to this report as Exhibit A).

A hearing was held on July 20, 2006 in which the parties presented arguments to me regarding disputed claim terms (the "Hearing"). No new evidence was received at this Hearing. A transcript of the Hearing proceedings is included in this report as Exhibit B.

The '326 patent is a division of the '567 patent and so these patents have identical specifications and related file histories. Consequently, common disputed claim terms in these patents are construed jointly with reference to the common specification and either or both file histories.

The recommendations contained in this report are based upon relevant claim construction law in consideration of the arguments presented at the Hearing and the claim construction briefs and related

submissions filed with the court by the parties, including the prosecution histories of each of the patents in suit.

Legal Principles of Claim Construction

Claim construction analysis begins with the words of the claim. *See* Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582, 39 USPQ2d 1573, 1576 (Fed.Cir.1996). The claim language defines the metes and bounds of claim scope. Bell Communications Research, Inc. v. Vitalink Communications Corp., 55 F.3d 615, 619-20, 34 USPQ2d 1816, 1819 (Fed.Cir.1995). "[T]he claims define the scope of the right to exclude; the claim construction inquiry, therefore, begins and ends in all cases with the actual words of the claim." Renishaw PLC v. Marposs Societa'Per Azioni, 158 F.3d 1243, 1248, 48 USPQ2d 1117, 1120 (Fed.Cir.1998). "[T]he language of the claim frames and ultimately resolves all issues of claim interpretation." Abtox, Inc. v. Exitron Corp., 122 F.3d 1019, 1023, 43 USPQ2d 1545, 1548 (Fed.Cir.1997).

The words used in the claims are interpreted in light of the intrinsic evidence of record, including the written description, the drawings, and the prosecution history, if in evidence. Interactive Gift Express, Inc. v. Compuserve, Inc., 256 F.3d 1323, 1331, 59 USPQ2d 1401, 1407 (Fed.Cir.2001). Under the Federal Circuit's framework, to ascertain the meaning of a patent's claims, the Court must turn first to the intrinsic evidence within the patent, including the claims themselves, the written description, and the prosecution history. CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 [62 USPQ2d 1658] (Fed.Cir.2002). "Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language." Vitronics, 90 F.3d at 1582, 39 USPQ2d at 1576.

Only where the claim meaning cannot be ascertained from the intrinsic evidence should extrinsic evidence, such as expert testimony, be considered. Bell Atlantic Network Servs., Inc. v. Covad Communications Group, Inc., 262 F.3d 1258, 59 USPQ2d 1865. In most situations, resort to extrinsic evidence is unnecessary and improper, as "an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term." Vitronics, 90 F.3d at 1582, 39 USPQ2d at 1576.

When evaluating the intrinsic evidence, "[c]laim language generally carries the ordinary meaning of the words in their normal usage in the field of invention." Invitrogen Corp. v. Biocrest Mfg., L.P., 327 F.3d 1364, 1367, 66 USPQ2d 1631 (Fed.Cir.2003). Indeed, there is a heavy presumption that a claim term carries its ordinary and customary meaning as it would be understood by one of ordinary skill in the relevant art at the time of the invention. Zelinski v. Brunswick Corp., 185 F.3d 1311, 1315, 51 USPQ2d 1590 (Fed.Cir.1999). "Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." Phillips v. AWH Corp., 415 F.3d 1303, 1313, 75 USPQ2d 1321 (Fed.Cir.2005).

While the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims. Constant v. Advanced Micro-Devices, Inc., 848 F.2d 1560, 1571, 7 USPQ2d 1057, 1064 (Fed.Cir.1988). Claim terms take on their ordinary and accustomed meanings unless the patentee demonstrated an intent to deviate from the ordinary and accustomed meaning of a claim term by redefining the term or by characterizing the invention in the intrinsic record using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope. Teleflex Inc. v. Ficosa North America Corp., 299 F.3d 1313, 63 USPQ2d 1374 (Fed.Cir.2002). If a patentee acts as his own lexicographer in changing the

meaning of particular claim terms to other than their ordinary meaning, he must clearly express that intent in the written description. *See, e.g.,* Bell Atl. Network Servs. v. Covad Communications Group, Inc., 262 F.3d 1258, 1268, 59 USPQ2d 1865 (Fed.Cir.2001).

Although reference to the language of the claims and the written description is paramount, Digital Biometrics, Inc. Identix, Inc., 149 F.3d 1335, 1344 [47 USPQ2d 1418] (Fed.Cir.1998), the prosecution history also provides a particularly helpful reference, as it "contains the complete record of all the proceedings before the Patent and Trademark Office, including any express representations made by the applicant regarding the scope of the claims." Vitronics, 90 F.3d at 1582-83. However, the prosecution history must be viewed with caution when used for claim construction purposes. Phillips v. AWH Corp., 415 F.3d 1303, 75 USPQ2d 1321 (Fed.Cir.2005). ("Yet because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes. *See* Inverness Med. Switz. GmbH v. Warner Lambert Co., 309 F.3d 1373, 1380-82, 64 USPQ2d 1933 (Fed.Cir.2002).")

In instances where the ordinary meaning of claim language as understood by a person of skill in the art is readily apparent, claim construction involves little more than the application of the widely accepted meaning of commonly understood words. Brown v. 3M, 265 F.3d 1349, 1352 [60 USPQ2d 1375] (Fed.Cir.2001). In such circumstances, general purpose dictionaries may be helpful. Phillips, 415 F.3d 1303, 75 USPQ2d 1321.

Clear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art transforms the preamble into a claim limitation because such reliance indicates use of the preamble to define, in part, the claimed invention. *See generally* Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc., 246 F.3d 1368, 1375, 58 USPQ2d 1508, 1513 (Fed.Cir.2001). But preambles describing the use of an invention generally do not limit the claims because the patentability of apparatus or composition claims depends on the claimed structure, not on the use or purpose of that structure. In re Gardiner, 36 C.C.P.A. 748, 171 F.2d 313, 315-16, 80 USPQ 99, 101(CCPA 1948). Statements of intended use or asserted benefits in the preamble may, in rare instances, limit apparatus claims, but only if the applicant clearly and unmistakably relied on those uses or benefits to distinguish prior art. Catilina Marketing International Inc. v. Coolsavings.com Inc., 289 F.3d 801, 62 USPQ2d 1781 (Fed.Cir.2002).

Finally, differences among claims can also be a useful guide in understanding the meaning of particular claim terms. *See* Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1538 [19 USPQ2d 1367] (Fed.Cir.1991). For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim. *See* Liebel-Flarsheim Co. v. Medrad, Inc., 358 F.3d 898, 910, 69 USPQ2d 1801 (Fed.Cir.2004).

Level of Skill in the Art

At the outset, it is important to determine the level of ordinary skill in the art for the purpose of construing the disputed claim terms. As mentioned above, the patents in suit all relate to cutting tool attachments for heavy construction and mining equipment. I find that one of ordinary skill in this art would have at least a four-year degree in mechanical engineering or a related discipline, and over five years of relevant design experience in the tool making or heavy equipment industry. These qualifications are generally consistent with the views of the parties expressed at the Hearing. (Hearing Transcript, p. 129, line 17 through p. 130,

line 25).

Disputed Terms

1. "*and*"

In independent claims 1, 6 and 11 of the '326 patent and 1, 3, and 8 of the '567 patent, the parties dispute the meaning of the term "and" in the phrase "assembly for use in road milling, trenching **and** mining equipment." A representative example of the usage of this phrase appears in claim 1 of the ' 567 patent:

1. A bit holder for use in road milling, trenching and mining equipment as part of an assembly including a bit, said bit holder and a bit block, said bit being mountable in a first bore through said bit holder and said bit holder being mountable in a second bore through said bit block, said bit holder comprising:

a bit receiving front portion terminating at an annular flange for engaging a face of said bit block, a shank portion extending axially rearwardly from said annular flange, said shank portion including a declining taper from adjacent said annular flange to adjacent a distal end thereof, said declining taper providing an interference fit between said bit holder and said bit block,

said shank portion including an axial bore centrally therethrough, and

means on said shank portion for providing increased resilience for an outer surface of said declining taper to increase the usable interference fit between said declining taper and said second bore on said bit block by at least about four times a standard interference fit therebetween as said shank portion is fully mounted on said second bore.

Defendant asserts that the use of the conjunctive term "and" in this phrase directs that the phrase when properly construed means that the assembly must be suited for use in all three types of equipment: 1) road milling, 2) trenching, and 3) mining. Plaintiff maintains that the term "and" in this context is not conjunctive and that accordingly the phrase means that the assembly may be useable in one, two or all three types of equipment. The parties agree that the disputed term and phrase is part of the preamble of each claim in which it appears.

In support of its position, Defendant relies upon: i) the plain meaning of the term as evidenced by the dictionary meaning of "and" ("together with or along with"); ii) the use of the term in the specification of the '326 patent at column 1, line 12; and iii) remarks made during prosecution of the application that appear in an office action response dated January 15, 2003. Specifically Defendant quotes the following from the January 15 response:

Applicant's newly added claims recite that applicant's invention resides in a unique and non-obvious bit holder and bit block, both individually and in combination for use in road milling, trenching and mining equipment wherein the bit bolder includes a generally frustoconical front portion terminating at an annular flange and a generally cylindrical bit holder shank portion extending axially rearwardly from the annular flange to define an annular side wall. An elongate slot is positioned radially through the side wall extending axially from a distal end of the shank and terminating between the distal end and the front portion of the bit holder. The remainder of the outer surface of the shank adjacent the slot provides interference with the second bore on the bit block sufficient to maintain the bit holder on the bit block during use. None of the patents cited by the Examiner, or any combination of them or the Montgomery patent or any combination of

Montgomery with any of the other patents cited disclose applicant's invention as described and claimed.

Amendment, 1/15/03, pp. 6-7.

Defendant further relies on the unpublished opinion in *Patient Transfer Systems, Inc. v. Patient Handling Solutions, Inc.,* 2000 U .S. Dist. Lexis 7648 (E.D.Pa.2000) in which the district court rejected plaintiff's argument that the term "and" should be considered in the disjunctive for the purpose of interpreting the third subset of limitations in the claims, and in the conjunctive elsewhere in the claims.

Plaintiff bases its argument on "controlling authority from the Federal Circuit," citing Phillips v. AWH Corp., 415 F.3d 1303, 75 USPQ2d 1321 (CA FC 2005), for the proposition that use of the word "and" in a list of applications in a claim does not require that all listed applications be present to establish infringement.

I find that because the disputed language appears only in the preamble and merely refers to the intended use of the claimed apparatus, the phrase "for use in road milling, trenching and mining equipment" is not a claim limitation. Consequently this phrase does not support a construction that the claimed invention is limited only to devices that are capable of being used in each of the recited types of equipment.

One skilled in the art would recognize that the reference to the equipment in the preamble merely identifies the types of equipment in which the invention may be used advantageously and does not describe a new universal device that in a single embodiment could be used in all the listed types of equipment. Indeed, in an Office Action Response filed on October 16, 2001 during the prosecution of a related application that issued as the '567 patent, the patentee argued, on page 11, lines 9-13:

[l]it should be noted that the invention is not only used in road milling equipment but also for mining equipment and trenching equipment. **The sizes of these bits differ substantially depending upon their use.** Therefore the specific numbers for the interference fits would also vary because of the diameters of the shank of the bit holders that are positioned in the bit block bores. Applicant submits that it has given specific details of a preferred embodiment of the invention and is entitled to claim those details broadly enough to cover all of the uses specifically mentioned in the specification. (Emphasis added)

This argument clearly indicates that patentee did not contemplate that a single device could fulfill all the uses listed in the claim preamble. The tool assemblies must be appropriately sized to meet each application.

Although statements of intended use or asserted benefits in the preamble may, in rare instances, limit apparatus claims, they do so only if the applicant "clearly and unmistakably relied on those uses or benefits to distinguish prior art." *See Catalina Marketing International v. Coolsavings.com Inc., supra*. Nothing in the prosecution history of the '326 or '567 patents demonstrates such clear and unmistakable reliance to distinguish over prior art cited by the examiner.

2. "*generally frustoconical*"

The parties disagree over the meaning of the term "generally frustoconical" as that term is used in claims 1, 6, and 11 of the '326 patent. Defendant argues that the term "frustoconical" means the geometric shape defined by a cone with its top removed, and that "generally frustoconical" means a shape with slight deviations from a purely frustoconical shape. Plaintiff contends that "generally frustoconical" means a shape

that is similar to a frustum of a cone. The parties agree on the definition of the term "frustoconical" but appear to be in disagreement over the meaning of the modifier "generally."

For the proposes of construing this term, I find that "generally" should be given its ordinary meaning which according to *Webster's New Universal Dictionary* means "with respect to the larger part; for the most part". Nothing in the specification or prosecution history of the '326 patent indicates that the patentee intended any other meaning of this term. I construe the term "generally frustoconical" to mean "having a shape that in its overall impression resembles the frustum of a cone." "Generally frustoconical" does not carry a limitation that the sides of the shape must be defined by straight lines.

3. "***generally cylindrical***"

The parties disagree with regard to the meaning of the term "generally cylindrical" as that term is used in independent claims 1, 6, and 11 of the ' 326 patent. Plaintiff argues that "generally cylindrical" means having a geometric shape that resembles a cylinder. Defendant asserts that the term "generally cylindrical" as used in the claims of the '326 patent means having a geometric shape that approximates, but is not, purely cylindrical. (Hearing Transcript, p. 41, lines 8-10). Defendant further argues that the term "generally cylindrical" does not include a cylinder-like shape having a taper greater than 4 degrees on each side (or stated another way, a taper greater than an 8 degree included angle).

Defendant bases its argument on the description of the bit holder shank (the claim element that is modified by the term "generally cylindrical") set forth in the specification of the '326 patent at column 5, lines 13-16:

The taper for the shank 73 and bore 80 is preferably 1 degree on each side, but may be more or less, such as 2 to 4 degrees per side or 1/4 to 3/4 degree per side, if desired.

and column 6, lines 30-33:

The rear taper 101 and the front taper 100 are preferably identical, in this embodiment 1 degree. However, these tapers can vary as discussed previously above.

Plaintiff bases its argument on the disclosure in Figure 2 of the drawings of the '326 patent, reference number 35. (See Figure 2 hereinbelow).

For the purposes of construing this term, I find that "generally" should be given its ordinary meaning which according to *Webster's New Universal Dictionary* means "with respect to the larger part; for the most part". I also find that "cylindrical" should be given its ordinary meaning which according to *Webster's New Universal Dictionary* means "pertaining to or having the form of a cylinder". There is nothing in the specification or prosecution history of the '326 patent to direct that either term should be given any other meaning. Consequently, I construe the term "generally cylindrical" to mean "having a shape that in its overall impression resembles a cylinder." As construed, "generally cylindrical" includes a true cylindrical shape.

4. "***annular flange***"

In independent claims 1, 6 and 11 of the '326 patent and claims 1, 3 and 8 of the '567 patent, the parties dispute the meaning of the term "annular flange." Plaintiff asserts that the term means a flange having a ringed-shaped portion. Defendant argues that the term "annular flange" means a continuous ring-shaped rim

presenting an unbroken flat surface. Defendant further argues that the term specifically excludes flanges having any discontinuities in the inner or outer circumferential periphery.

Defendant bases its argument on the description in the specification in column 3, lines 8-10, for the embodiment shown in Figures 1 and 2 of the '326 patent:

The back side 34 of flange 33 is an annular flat surface which rests on the bit block 23 when mounted thereon, and includes one aspect of the present invention to be discussed below.

column 4, lines 30-32 for the embodiment shown in Figures 3-8:

Additionally, the rear of the middle tapered portion 63 is an enlarged flange portion 66 including an annular flange backside 67 similar to that shown in the first embodiment 22.

and column 5, lines 62-64 for the embodiment shown in Figures 9 and 10:

... (the middle tapered portion 93 and) the enlarged flange portion 94 perform similar functions to the forward portion of the bit holder of the second embodiment 60.

Defendant also relies on the inventor's contrasting description of the shank as being "semi-annular" (because it has a slot interrupting its circumference) at column 4, lines 52-55 of the '326 patent:

In an important aspect of the present invention, a slot 81 extends through the sidewall of the shank portion from the rear **semi-annular face** 77 to a rounded front slot termination 82. (Emphasis added).

Further, the defendant points to the absence of the modifier "generally" which was used by the inventor elsewhere in the claims ("generally frustoconical" and "generally cylindrical") as supporting its proposed meaning for the "annular flange" term.

Plaintiff bases its argument on the disclosure in the drawings of the '326 patent, Figure 2, element 33, and Figure 3, element 66. (See Figures 2 and 3 below)

I find that the term "annular flange" should be construed according its ordinary meaning which is "a flange having the shape of a ring." The term is not limited to a continuous flange or a flange with an unbroken circumferential periphery. In this regard, the specification of the '326 patent discloses an annular flange with a discontinuous outer circumference as illustrated in Figures 1 and 2 of the drawings where back side 34 of flange portion 33 is clearly shown to have cutouts (unnumbered) extending though the outer periphery of the flange.

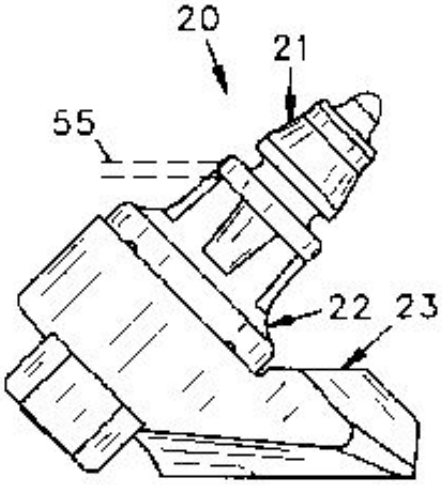


FIG.1

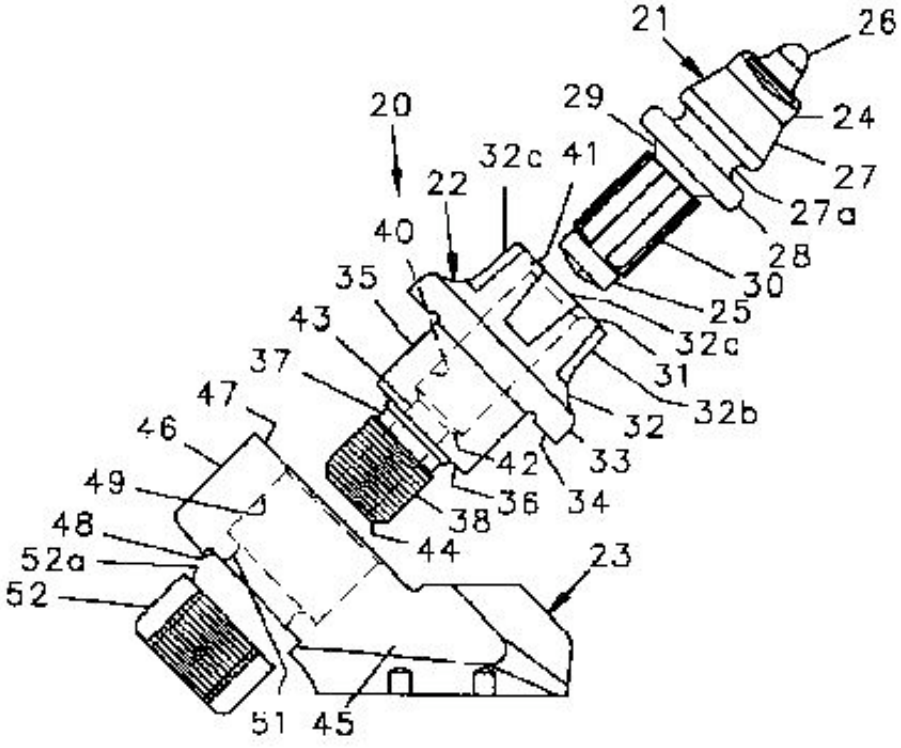


FIG.2

The drawings further show in Figure 9 an element 94a (not named in the specification) which would be

understood by one of ordinary skill in the art reading this drawing to be a cutout extending through the outer periphery of the enlarged flange portion 94.

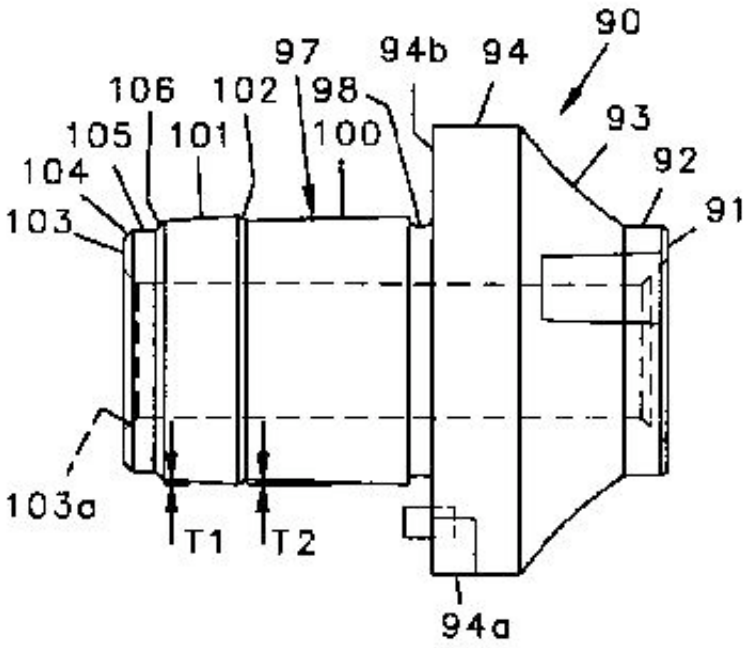


FIG.9

5. "***annular sidewall***"

This term appears in independent claims 1, 6, and 11 of the '326 patent and is identified as a disputed term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that this term in no longer in dispute. The term "annular sidewall" means "a sidewall of a round hollow tube." (Hearing Transcript, p. 58, lines 12-25).

6. "***elongate slot***"

This term appears in independent claims 1, 6, and 11 of the '326 and is identified as a disputed term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that this term in no longer in dispute. The term "elongate slot" means "a slot that is longer than it is wide." (Hearing Transcript, p. 60, lines 6-23).

7. "***interference***"

8. "***sufficient to maintain said bit holder on said bit block during use***"

The parties disagree with regard to the meaning of the phrase "sufficient to maintain said bit holder on said bit during use" as it modifies the term "interference" as used in independent claims 1, 6, and 11 of the '326

patent:

[P]roviding interference with said second bore on said bit block sufficient to maintain said bit holder on said bit block during use.

Plaintiff and defendant appear to be in agreement with respect to the independent meanings of the term "interference" and the phrase "sufficient to maintain said bit holder on said bit block during use." The sole remaining disputed issue seems to be whether the claim language requires that the retention force created by the "interference" (between the C-shaped portion of the bit holder shank and the second bore in the bit block) **exclusively** maintains the bit holder on the bit block when the assembly is in use without any supplemental retaining mechanism or structure.

I find that the phrase "sufficient to maintain the bit holder on said bit block during use" means that the "interference" between the C-shape portion of the bit holder shank and the bore in the bit block must be adequate by itself to generate a retention force great enough to retain the bit holder in the bit block during normal use. However, because all of the claims have the transition term "comprising," the phrase "sufficient to maintain the bit holder on said bit during use" does not preclude supplemental retention mechanisms in the assembly for retaining the bit holder in the bit block.

9. "***resiliently collapsible diametrically***"

This phrase appears in dependent claims 2, 7 and 12 of the '326 and is identified as a disputed term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that this phrase is no longer in dispute. The phrase "resiliency collapsible diametrically" means "capable of being elastically compressed to a smaller diameter." (Hearing Transcript, p. 78, line 6 through p. 79, line 6).

10. "***for absorbing radial forces directed to the bit holder***"

The parties disagree with regard to the meaning of the phrase "for absorbing radial forces directed to the bit holder" as the phrase is used in dependent claims 3, 8, and 13 of the '326 patent:

[W]herein said C-shape portion of said shank is resiliently collapsible when said bit holder is mounted on said bit block for absorbing radial forces directed to said bit holder.

The parties agree that the phrase means that radial forces directed to the bit holder are absorbed by the preceding structure recited in the claim (*i.e.,* the resiliently collapsible C-shape portion of the shank mounted on the bit block). Defendant argues that this claim language means that *all* such forces are absorbed only by the recited structure; plaintiff, on the other hand, argues that the claim language requires that only *some* of the forces are absorbed by the recited structure.

I find that the phrase "for absorbing radial forces directed to the bit holder" as used in the claims 3, 8 and 13 to modify the preceding phrase "said C-shape portion of the shank is resiliency collapsible when said bit holder is mounted on said bit block" means "at least some radial forces on the bit holder are absorbed as a consequence of the C-shaped portion of the shank being resiliently collapsible when the bit holder is mounted on the bit block." The phrase does not require that all radial forces are absorbed only by the resiliency of the C-shaped portion of the shank because all of the claims have the transition phrase "comprising."

11. (said) "*shank outer diameter adjacent said front portion annular flange is smaller than said bit block axial bore adjacent a top face of said bit block for allowing resilient absorption of radial forces directed to said bit holder*"

The parties disagree with regard to the meaning of the recited phrase as used in independent claims 4, 9, and 14 of the '326 patent. Plaintiff maintains that this language means that the diameter of the shank nearest the top flange is smaller than the diameter of the bore at the top face of the bit block such that when a radial force is applied to the holder it will move with the force. Defendant argues that the recited language requires that the reduced diameter section of the shank must be positioned within the bore. Plaintiff and defendant agree that the phrase "shank outer diameter adjacent said front portion annular flange" relates to the undercuts 70 in Figure 3, and 98 in Figure 9, of the drawings of the '326 patent. (*See* Figure 9 above).

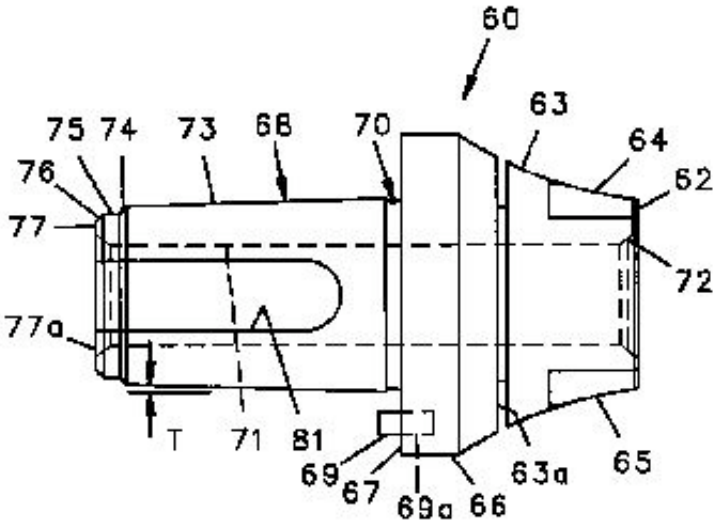


FIG.3

I find that the ordinary meaning of this phrase is that the shank has a reduced diameter section which is positioned proximal to the annular flange and which serves to resiliently absorb radial forces directed to the bit holder. As construed, the phrase does not require that the "shank outer diameter adjacent said front portion annular flange" be positioned within the bit block bore. Nothing in the specification or file history requires the bit holder shank to be fully inserted within the axial bore of the bit block. The claimed result of "resilient absorption of radial forces directed to said bit holder" is not dependent on the reduced diameter section of the shank being inserted partially or fully within the bit block bore.

12. "*interference is greater than a standard press fit*"

This phrase appears in dependent claims 5, 10 and 15 of the '326 patent and is identified as a disputed claim term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that this phrase is no longer in dispute. The phrase means that the interference between the bit holder shank and the bit block bore is greater than a standard press fit as defined in *Marks Mechanical Engineers Handbook, Sixth Edition* (this reference was cited to the USPTO by the patentee during prosecution of the

corresponding '567 patent to overcome a rejection that the term "standard press fit" was indefinite). An example of a "standard press fit" as described in the '326 patent at column 4, lines 58-62 is "about 0.001-0.003 inch" for a 11/2 inch diameter shank. In this example, an "interference greater than a standard press fit" means an interference greater than about 0.003 inches. (Hearing Transcript, p. 91, lines 1-17).

13. "***engaging a face of said bit block***"

This phrase appears in independent claims 1 and 3 of the '567 and is identified as a disputed claim term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that this phrase is no longer in dispute. The phrase means that "the rear surface of the bit holder flange physically contacts the bit block face." (Hearing Transcript, p. 95, line 24 through p. 96, line 17).

14. "***shank portion including a declining taper from adjacent said annular flange to adjacent a distal end thereof***"

The parties disagree with regard to the meaning of the recited phrase as used in independent claims 1 and 3 of the '567 patent. Plaintiff asserts that this phrase means that the diameter of the shank adjacent the annular flange is greater than the diameter at the distal end of the shank. Defendant argues that "declining taper" in the disputed claim phrase means that the taper must be continuous and decreasing from the annular flange to the distal end of the shank. Defendant further argues that the angle of the taper must be in the range between .25 and 4 degrees on each side.

Plaintiff relies on Figure 3, element 68 in the drawings of the '567 patent to support its position:

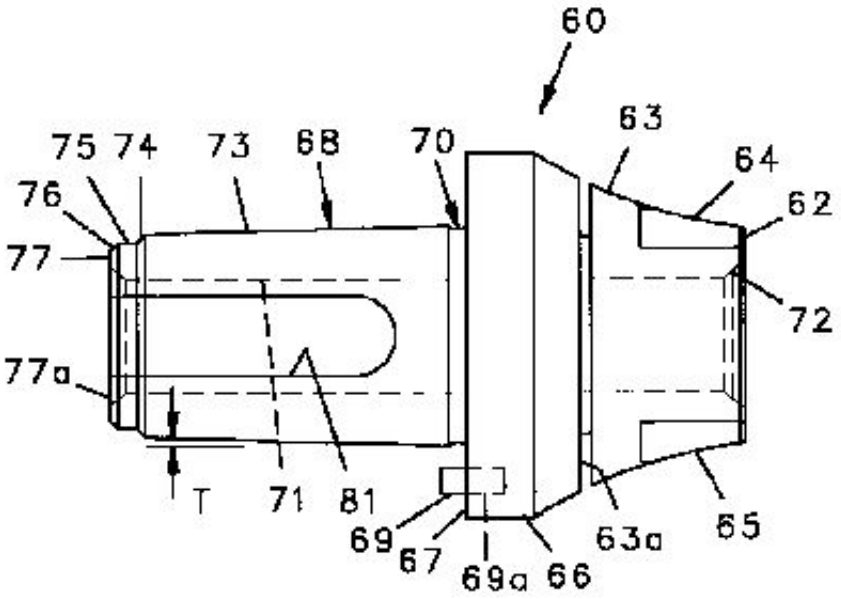


FIG.3

Defendant relies on plain meaning citing independent definitions from *Webster's Third New International Dictionary* for the terms "declining" and "taper." Defendant also relies on the specification of the '567 patent at column 5, lines 13-16:

The taper for the shank 73 and bore 80 is preferably 1 degree on each side, but may be more or less, such as 2 to 4 degrees per side or 1/4 to 3/4 degree per side, if desired.

I find that the phrase "shank portion including a declining taper from adjacent said annular flange to adjacent a distal end thereof" means that the shank tapers from a first diameter adjacent the flange to a second smaller diameter near the distal end but not necessarily uniformly or continuously. The degree of taper covered by the claim is not limited to the range (.25 to 4 degrees per side) set forth in the specification. This construction is based upon the specification at column 6, lines 13-18:

In an important aspect of the third embodiment of the present invention, the tapered outermost surface of the shank is divided into a front tapered portion 100 and a rear tapered portion 101. In this third embodiment 90, shoulder 102 is formed between the front tapered portion 100 and the rear tapered portion 101.

and is further based upon the language of Claim 3:

... said shank portion including a declining taper from adjacent said annular flange to adjacent a distal end thereof, said declining taper providing an interference fit between said bit holder and said bit block,

said **declining taper including a first taper portion** extending on said shank from adjacent said annular flange to a predetermined position between said annular flange and said distal end thereof, **a shoulder having a radially outwardly extending component** thereof positioned at said predetermined position **and a second taper portion** extending from said shoulder to a position adjacent said distal end of said shank. (Emphasis added).

This language is discussed in more detail hereinbelow at term numbers 20-22. It indicates that the patentee chose to be his own lexicographer with respect to the meaning of "declining taper" by using this term to include a series of tapers.

15. (said declining taper providing an) "*interference fit*"

This phrase appears in independent claims 1 and 3 of the '567 patent and is identified as a disputed claim term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties seemingly agreed that this phrase is no longer in dispute. (Hearing Transcript, p. 102, lines 20-25).

However, since this agreement may not be entirely clear from the record, in the interest of judicial economy I construe the phrase to mean that the declining taper (as construed above in term number 14) creates a size interference between the bit holder shank and the bit block bore. This construction is based upon the meaning of the phrase as described in the specification at column 4, lines 55-58:

An interference fit between the outside of tapered shank portion 73 and the like tapered bore 80 of the bit block 61 is greater than the interference fit possible if slot 81 was not in the shank portion.

and at column 5, lines 2-5:

The portion of shank 68 forward of slot 82 provides a 360 degree radial interference fit with the bit block bore 80, and may be greater than, equal to, or less than an interference fit at the portion of the shank at 101[sic].

16. "***means on said shank portion for providing increased resilience for an outer surface of said declining taper to increase the usable interference fit***"

This phrase appears in independent claims 1 and 3 of the '567 patent and is identified as a disputed claim term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that this phrase is no longer in dispute. 35 U.S .C. Section 112(6) requires construction of means-plus-function claims as covering the structure set forth in the specification and equivalents thereof. This report is limited to construction of the structure set forth in the specification; I did not purport to identify "equivalents" to that structure. Moreover the parties at the Hearing stipulated that the means-plus-function element is limited to the disclosure in the specification. (Hearing Transcript, p. 104, line 20 through p. 105, line 6). This phrase means that the shank portion has a radial slot through the sidewall (from the outer surface to the axial bore) which functions to increase the resiliency of the shank portion. This construction is supported in the specification at column 4, lines 52-54:

In an important aspect of the present invention, a slot 81 extends through the sidewall of the shank portion from the rear semi-annular face 77 to a rounded front slot termination 82.

17. "***at least about four times a standard interference fit***"

The recited phrase is found in independent claim 1 of the '567 patent. While the parties agree on the meaning of "standard interference fit" they disagree on the meaning of "at least about four times a standard interference fit." Plaintiff asserts that the phrase means a range which is determined by multiplying times four the upper and lower limit of the range for a standard interference fit. Defendant argues that the phrase defines a minimum threshold value which is calculated by multiplying times four the upper limit of the range for a standard interference fit.

Plaintiff bases its argument on the language of the specification at column 4, lines 55-62:

In an important aspect of the present invention, a slot 81 extends through the sidewall of the shank portion from the rear semi-annular face 77 to a rounded front slot termination 82. An interference fit between the outside of tapered shank portion 73 and the like tapered bore 80 of the bit block 61 is greater than the interference fit possible if slot 81 was not in the shank portion. For example, a 11/2 inch diameter shank without a slot would ordinarily have about 0.001-0.003 inch interference. With slot 81, the same size shank may have about 0.005-0.012 inch interference in the portion including the slot 81.

Defendant bases its assertions on the prosecution history for the '587 patent and in particular on arguments made in an Office Action Response dated October 3, 2001:

In response to the Examiner's rejection of the claims under 35 U .S.C. s. 112 due to the use of the term "a standard interference fit," the applicant responded as follows: "With respect to the wording "a standard interference fit," the examiner is directed to turn to page 11 of the specification where it states "For example, a 1-1/2 inch diameter shank without a slot would ordinarily have about .001-.003 interference.

With slot 81, the same size shank may have about .005-.012 inch interference in the portion including the slot 81." As the Patent Office can see, applicant has indicated what a standard interference fit would be for the preferred embodiment, and what the interference fit is for the invention as claimed. Applicant has directed this patent application to one skilled in the art, as well as to one who simply read the specification on page 11 thereof. Applicant submits that the claim language is clear what the meets [sic] and bounds are for a standard interference fit with respect to the lower boundary thereof. While the Examiner would like to have the applicant insert numerical limits as being critical, it should be noted that the invention is not only used for bit holders and bit blocks in road milling equipment but also for mining equipment and trenching equipment. The sizes of these bits differ substantially depending upon their use. Therefore, the specific numbers for the interference fits would also vary because of the diameters of the shank of the bit holders that are positioned in the bit block bores. Applicant submits that it has given specific details of a preferred embodiment of the invention and is entitled to claim those details broadly enough to cover all of the uses specifically mentioned in the specification. Applicant attaches hereto pages 922-924 of the Mechanical Engineer's Handbook showing the various fits. These fits are well known in the art and the language used in the claim meets the requirements of 35 USC 112.

Amendment dated 10/03/01, pp. 10 and 11 (Id.)

Defendant contends that these representations indicate an attempt to delineate a "standard interference fit" from the interference fit of the claimed invention. Defendant argues that this requires that the claimed value of "at least about four times a standard interference fit" is determined by multiplying times four the *upper limit* of the range for a "standard interference fit."

I find that the phrase **"at least about** four times a standard interference fit" means within the range of, or greater than, four times the range of a standard interference fit. This construction is based upon the specification of the ' 567 patent at column 4, lines 58-62 (see specification language recited above). The interference range for a 11/2 in. shank is described as being within the range of about 0.005-0.012 inches which is about four times the range specified for a standard interference fit for the same size shank. This is in contrast with the construction of "interference is **greater than** a standard press fit" hereinabove (term # 12) which required the interference to be greater than the upper end of the standard press fit range.

In construing "at least" and "greater than" in reference to a range, I find that "at least" means within or greater than the range, "greater than" means greater than the upper limit of the range.

18. "***a radial slot through one half of said shank portion from said outer surface of said declining taper to said axial bore centrally therethrough***"

This phrase appears in dependent claim 2 of the '567 patent and is identified as a disputed claim term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that this phrase is no longer in dispute. The phrase means that a radial slot extends through the sidewall of the shank from the outer surface to the central bore as described in the specification of the '567 patent in column 4, lines 52-55 and as depicted in Figures 3 and 8 of the drawings. The parties agreed at the Hearing that the phrase "one half of said shank" is not a limitation on the length of the slot (Hearing Transcript, p. 112, lines 4-14) although defendant had made the argument in its Response Brief (p. 37, lines 14-17) that the language limits the length of the slot to one half of the axial length of the shank. Based on the depiction in Figure 3 of the '567 patent, I find that the phrase "a radial slot through one half of said shank portion" means that the slot is located in one half of the shank as defined by a plane passing through its longitudinal axis.

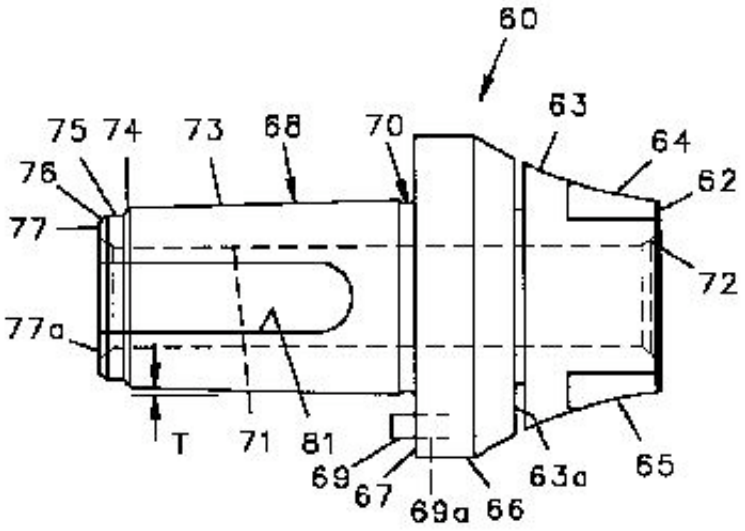


FIG.3

19. "***predetermined axial distance*** **(from said annular flange)"**

This phrase appears in dependent claim 2 of the '567 patent and is identified as a disputed claim term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that this phrase is no longer in dispute. (Hearing Transcript, p. 112, line 15 through p. 113, line 21). The ordinary meaning of this phrase is that the radial slot (as construed above) in the shank terminates at a predetermined axial distance from the annular flange of the bit holder, which distance is a matter of design choice.

20. "***said declining taper including a first taper portion extending on said shank from adjacent said annular flange to a predetermined position between said annular flange and said distal end***"

21. "***a shoulder having a radically outwardly extending component thereof positioned at said predetermined position***"

22. "***a second taper portion extending from said shoulder to a position adjacent said distal end of said shank.***"

The parties disagree with regard to the meaning of the recited phrases as used in independent claim 3 of the '567 patent:

said **declining taper including a first taper portion** extending on said shank from adjacent said annular flange to a predetermined position between said annular flange and said distal end thereof, **a shoulder having a radially outwardly extending component** thereof positioned at said predetermined position **and a second taper portion** extending from said shoulder to a position adjacent said distal end of said shank.

(Emphasis added).

The essence of the parties' disagreement is whether or not the meaning of "declining taper" as it is used in claim 3 is consistent with the meaning of this term as it appears in claim 1 (see discussion above at # 14). Defendant asserts that it is not, plaintiff disagrees. The recited language indicates that the declining taper has a first and a second taper portion and a radially outwardly extending shoulder delineating the two. I find that "declining taper" as used in claim 3 means that the shank tapers from a first diameter adjacent the flange to a second smaller diameter near the distal end, but not necessarily uniformly or continuously. This construction of "declining taper" is consistent with the meaning attributed to this term in claim 1 as discussed in # 14 above and complies with the requirement that claim terms must be construed consistently. This meaning of the claim language is supported in the specification of the '567 patent in column 6, lines 13-18:

In an important aspect of the third embodiment of the present invention, the tapered outermost surface of the shank is divided into a front tapered portion 100 and a rear tapered portion 101. In this third embodiment 90, shoulder 102 is formed between the front tapered portion 100 and the rear tapered portion 101.

and in Figure 9 of the drawings:

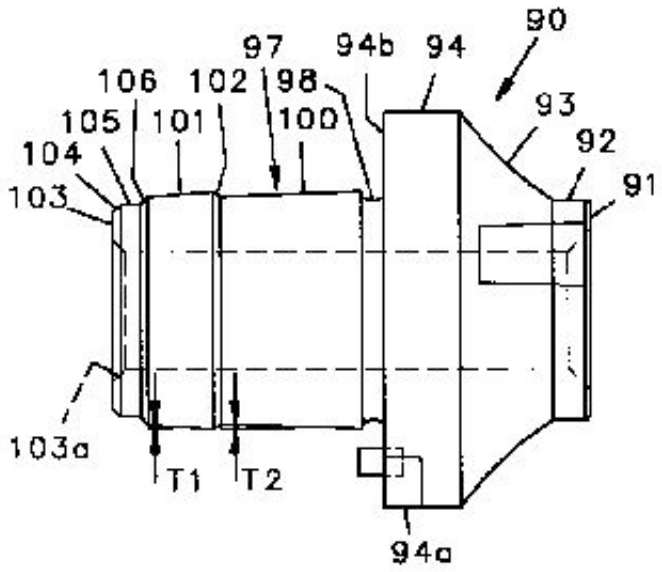


FIG.9

23. "***first and second taper portions have identical tapers***"

This phrase appears in dependent claim 4 of the '567 patent and is identified as a disputed claim term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that this phrase is no longer in dispute. The ordinary meaning of this phrase is that the degree of taper in the first and second

taper portions is the same. (Hearing Transcript, p. 119, line 10 through p. 120, line 5).

24. "***insertion of said second taper portion of said shank in said second bore lessens an outer diameter of said first taper portion of said shank to the extent that an actual interference fit between said first taper portion and said second bore on said bit block is achieved only at about the last 1/4 to 5/8 inch of insertion of shank in said second bore***"

This phrase appears in dependent claim 5 of the '567 patent and is identified as a disputed claim term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that this phrase is no longer in dispute. The agreed upon meaning is that an interference fit between the first taper portion and the bore of the bit block is achieved only in the last 1/4 to 5/8 in. of travel when the shank is fully inserted into the bit block. (Hearing Transcript, p. 120, line 14 through p. 123, line 9).

25. "***each of said first taper portion, shoulder and second taper portion of said shank is sized to be an interference fit with said second bore prior to inserting said shank therein***"

This phrase appears in dependent claim 6 of the '567 patent and is identified as a disputed claim term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that this phrase is no longer in dispute. The ordinary meaning of this phrase is that the three elements of the shank-the first and second taper portions and the shoulder-all are larger than their respective mating sections of the second bore so that an interference fit is achieved between the bore and all three elements when the shank is fully inserted into the bore. (Hearing Transcript, p. 123, line 24 through p. 125, line 21).

26. "***interference fit between said second bore and a top segment said first taper portion is a standard interference fit***"

27. "***the interference fit between the second bore and said second taper portion is at least about four times the standard interference fit***"

The parties disagree regarding the meaning of these phrases that appear in dependent claim 7 of the '567 patent and are identified as disputed claim terms in the Joint Disputed Claim Terms Chart. Plaintiff argues that the phrases mean that there is i) a standard interference fit between the first taper portion and the bit block bore, and ii) a second interference fit between the second taper portion and the bit block bore which is greater than or equal to about four times the standard interference fit. Defendant argues that the phrases when read together require that the interference fits i) and ii) are interdependent such that the phrase "at least about four times the standard interference fit" in reference to the interference fit of the second taper portion with the bit block bore means "at least about **four times the specific standard interference fit** that exists between the first taper portion and the bit block bore."

Plaintiff relies on the specification of the '567 patent at column 4, lines 52-63 (recited above).

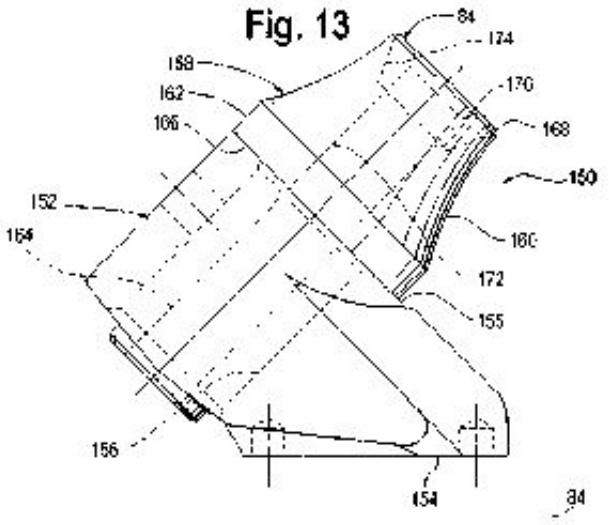
Defendant bases its assertions on the prosecution history for the '567 patent and in particular on arguments made in an Office Action Response dated October 3, 2001 (recited above).

I find that the disputed phrases mean that there is i) a standard interference fit between the first taper portion and the bit block bore, and ii) a second interference fit between the second taper portion and the bit block bore which is greater than or equal to about four times the specific standard interference fit in (i). This construction is based on the ordinary meaning of the claim directing that "**the** standard interference fit" in

phrase # 27 must refer to the antecedent "**a** standard interference fit" in phrase # 26.

28. "***a forward end***"

This term appears in independent claim 8 of the '327 patent and is identified as a disputed claim term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that the term is no longer in dispute. (Hearing Transcript, p. 132, line 15 through p. 133, line 15). The ordinary meaning of this term is "a front portion." Support for this construction is found in Figure 13, item 160 of the drawings in the '327 patent:

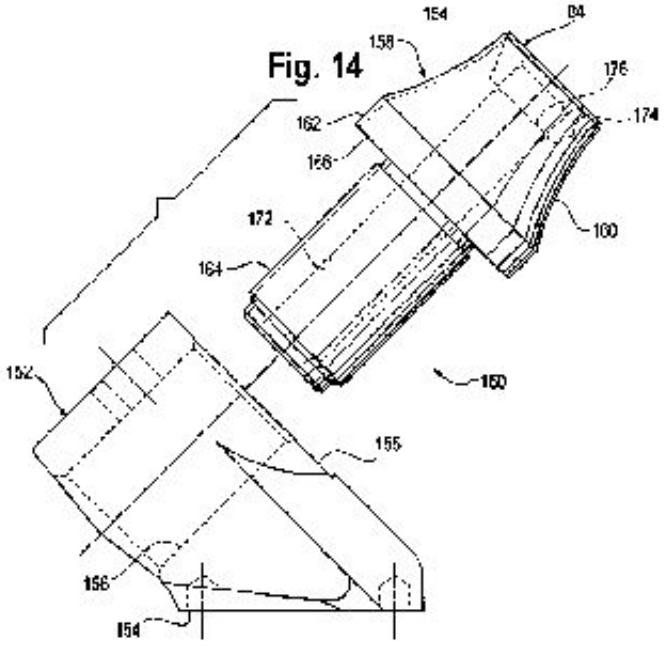


as well as in column 10, lines 20-22 of the specification:

Fitted into the bore 156 is an elongate tool holder 158 having a tapered forward end 160 which diverges to a cylindrical mid-section 162.

29. "***a rearwardly facing annular shoulder***"

This term appears in independent claim 8 of the '327 patent and is identified as a disputed claim term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that the term is no longer in dispute. (Hearing Transcript, p. 134, line 4 through p. 136, line 5). The meaning of this term is "an annular surface facing away from the front portion." This construction finds support in Figures 13 (see above) and 14, element 162 of the drawings of the '327 patent:



and in the specification at column 10, lines 27-31:

The diameter of the mounting portion 164 is substantially less than the diameter of the mid-section 162 thereby forming a radial shoulder 166 therewith which contacts the forward surface 155 when the two parts are assembled together as shown in FIG. 13.

30. "***a portion of said forward end having a taper thereto***"

This phrase appears in independent claim 8 of the '327 patent and is identified as a disputed claim term in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that the phrase is no longer in dispute. (Hearing Transcript, p. 136, line 6 through 137, line 7). The meaning of this phrase is "the forward end has a portion that is tapered." This construction is supported in the specification of the '327 patent at column 10, lines 22-24:

Fitted into the bore 156 is an elongate tool holder 158 having a tapered forward end 160 which diverges to a cylindrical mid-section 162.

as well as in Figures 13 and 14, element 160 of the drawings.

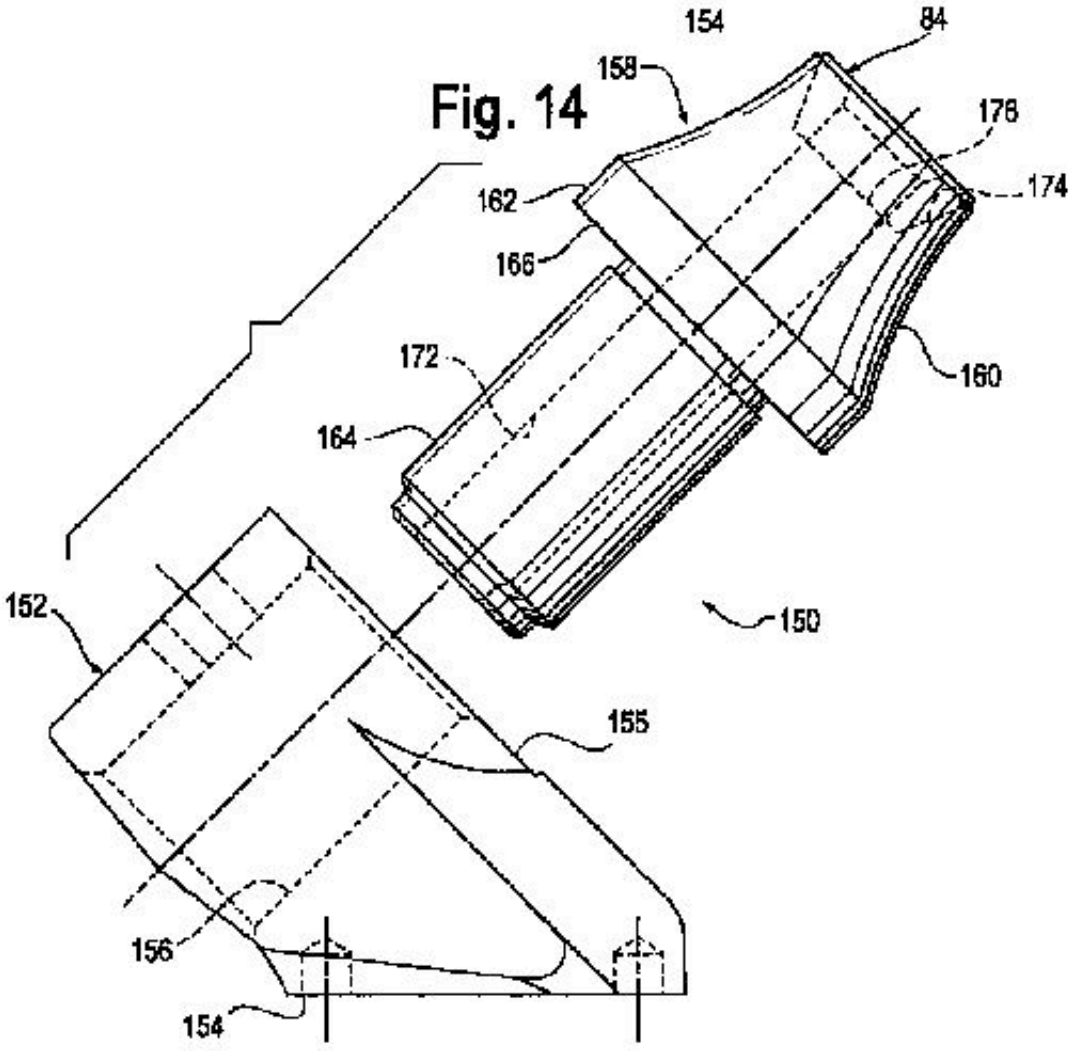
31. "***said forward end having a forward surface and***"

32 "***a side surface***"

33. "***joining said forward surface along an edge***"

The parties disagree with regard to the meaning of the recited language contained in independent claim 8 of

the '327 patent. The crux of the disagreement regarding the proper construction of this claim language is best understood by referring to Figure 14 of the drawings in the '327 patent.



Simply stated, defendant contends that because of representations made during prosecution of the '327 patent, claim 8 is limited to the two-piece embodiment of the tool retainer shown in Figures 13 and 14. That is, defendant contends that the language of claim 8 must be construed to require that the tool retainer must include tool holder (158) and an insert (84). Building on this premise, defendant argues that the meaning of the term "side surface" is limited to the exposed side surface of insert 84 which is offset from the remainder of the front portion of the tool retainer. Defendant grounds its argument on a statement made by the patentee during prosecution of the '327 patent in an office action response dated October 15, 2002, on page 8, lines 3-5 in connection with an amendment to claim 8:

"This is the structure of the tool holder 158 as shown in Figs. 13 and 14 of the drawings."

In contrast, plaintiff argues that although claim 8 might be directed to the embodiment shown in Figures 13 and 14, it is not limited to a two-piece construction of the tool retainer. Plaintiff asserts that claim 8 encompasses a unitary structure defined by the combination of the insert 84 and the tool holder 158. Plaintiff accordingly argues that the term "side surface" refers broadly to the side surface of the forward end 160 (generally indicated by the arrow extending from element number 158 in Figure 14 above).

I find that the term "forward surface" means the forwardmost surface of the forward end of the tool retainer and that "side surface" means all of the lateral surfaces of the forward end located between the forward surface and the annular shoulder. I also find that "joining said surface along an edge" means that the side surface intersects the forward surface to define an edge. The tool retainer of claim 8 is not limited to a two-piece construction. The construction of these terms is based on the ordinary meaning that would be understood by one skilled in the art when reading the claim in the context of the specification and the drawings of the '327 patent.

34. "***cylindrical aperture***"

35. "**(said)** ***cylindrical aperture extending through said forward end***"

36. "**(said)** ***cylindrical aperture opening in said forward surface***"

37. "**(said)** ***cylindrical aperture having an axis perpendicular to a plane of said forward surface***"

The parties disagree with regard to the meaning of the recited language contained in independent claim 8 of the '327 patent. The sole point of disagreement is whether the recited terms support defendant's position that the language of claim 8 must be construed to mean that the tool retainer is comprised of two components-a retainer body and an insert. Defendant's argument is that claim 8 is directed to the embodiment disclosed in Figures 13 and 14 of the drawings of the '327 patent and that consequently, the claimed tool retainer must include structure corresponding to a tool body 158 and insert 84. In support of this view defendant asserts that without the insert 84 seated within counterbore 174, the "cylindrical aperture" does not extend through the forward end of the tool holder. Rather, so defendant argues, the aperture in the forward end is frustoconical unless the insert 84 is present.

Plaintiff argues, correctly in my view, that the scope of claim 8 is not limited to a two-piece construction. Claim 8 does not contain any language defining the separate insert shown in Figure 14. Claim 8 does however describe features of the insert as part of the claimed tool retainer, including the "cylindrical aperture" that opens in the "said forward surface" (construed above).

I find that the term "cylindrical aperture" and the following language in claim 8 should be given its ordinary meaning-the tool retainer has a cylindrical aperture extending perpendicularly from the forward surface through the forward end.

38. "***said forward surface having at least one groove therein***"

39 "***(said) groove extending radially outward through said forward surface to said side surface of said***

tool retainer"

These phrases appear in independent claim 8 of the '327 patent and are identified as disputed claim terms in the Joint Disputed Claim Terms Chart. However, at the Hearing, counsel for the parties agreed that the meaning of these phrases is no longer in dispute. (Hearing Transcript, p. 170, line 1 through p. 172, line 1). It should be noted, however, that the parties are in sharp disagreement over the intended function of the claimed groove structure-an issue that is not relevant to the construction of the claim. The meaning of the phrase "said forward surface having at least one groove therein" is that there is "a groove formed in the front surface of the tool retainer." The meaning of "(said) groove extending radially outward through said forward surface to said side surface of said tool retainer" is that the "groove formed in the front surface extends radially outwardly to the side surface of the tool retainer."

SUMMARY

All of the Disputed Claim Terms identified the Joint Disputed Claim Terms Chart and still in dispute on the date of the Hearing have been construed in this report. Those Disputed Claim Terms which are no longer in dispute based upon the agreement of the parties at the Hearing have been construed in the report in accordance with my understanding of the agreed upon meanings. With respect to these terms, it may be appropriate for the parties to file an Amended Joint Disputed Claim Terms Chart. This concludes my report.

W.D.Pa.,2006.
Sollami Co. v. Kennametal Inc.