

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VIKING DRILL & TOOL, INC.

Petitioner

v.

HONGJIA WANG

Patent Owner

IPR2023-00473

U.S. Patent No. 11,007,583

PATENT OWNER'S SUR-REPLY

Viking Drill & Tool's Petition Filing Date: January 17, 2023

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. THE BOARD SHOULD REAFFIRM THE WANG '583 PATENT CLAIMS VIKING CHALLENGED IN ITS PETITION.....	1
A. Contrary to Viking's Reply, Wang Is Not Prior Art Because It Is Within Patent Owner's Claim of Priority.....	1
B. Bannister in View of Zhou and/or Welty Does Not Render Obvious Any Wang '583 Patent Claims	10
C. Bannister in View of Zhou and/or Welty and Korb Does Not Render Obvious Any Wang '583 Patent Claims	13
III. STRONG EVIDENCE OF SECONDARY CONSIDERATIONS OVERCOMES VIKING'S OBVIOUSNESS CHALLENGES.....	15
A. Wang Is Entitled To A Presumption Of Nexus.....	15
B. The Evidence Of Secondary Considerations Is Strong.....	19
1. Copying	20
2. Industry Praise.....	21
C. Commercial Success.....	22
IV. CONCLUSION.....	26

TABLE OF AUTHORITIES

Page(s)

Cases

<i>All Dental Prodx, LLC v. Advantage Dental Prod., Inc.</i> , 309 F.3d 774 (Fed. Cir. 2002)	2
<i>Apple Inc. v. Samsung Elecs. Co., Ltd.</i> , 839 F.3d 1034 (Fed. Cir. 2016)	15
<i>Ariad Pharms., Inc. v. Eli Lilly & Co.</i> , 598 F.3d 1336 (Fed. Cir. 2010) (<i>en banc</i>)	2, 7
<i>Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.</i> , 776 F.2d 281 (Fed. Cir. 1985)	20
<i>Centrak, Inc. v. Sonitor Techs., Inc.</i> , 915 F.3d 1360 (Fed. Cir. 2019)	8
<i>Fox Factory, Inc. v. SRAM, LLC</i> , 944 F.3d 1366 (Fed. Cir. 2019)	16, 19
<i>Henny Penny Corp. v. Frymaster LLC</i> , 938 F.3d 1324 (Fed. Cir. 2019)	12, 13
<i>Hologic, Inc. v. Smith & Nephew, Inc.</i> , 884 F.3d 1357 (Fed. Cir. 2018)	2, 7
<i>Inphi Corp. v. Netlist, Inc.</i> , 805 F.3d 1350 (Fed. Cir. 2015)	2, 7
<i>J.T. Eaton & Co., Inc. v. Atlantic Paste & Glue Co.</i> , 106 F.3d 1563 (Fed. Cir. 1997)	22
<i>In re Kerkhoven</i> , 626 F.2d 846 (CCPA 1980)	13
<i>Lockwood v. Am. Airline, Inc.</i> , 107 F.3d 1565 (Fed. Cir. 1997)	8
<i>Medtronic, Inc. v. Teleflex Innovations S.a.r.l.</i> , 69 F.4th 1341 (Fed. Cir. 2023)	13

<i>S.-Tek Sys., LLC v. Engineered Corrosion Sols., LLC</i> , 748 F. App'x 1003 (Fed. Cir. 2018).....	13
<i>Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.</i> , 699 F.3d 1340 (Fed. Cir. 2012)	24

I. INTRODUCTION

Wang presented a strong showing that the Wang '900 Application is a priority document, and therefore not than prior art, and Viking's Reply does not sufficiently rebut this. Viking argues repeatedly that flutes 4, since they are parallel, cannot "intersect" to form a line. Viking ignores, however, that a POSA would understand from the '900 Application that flutes 4 form cylindrical surfaces and conical surfaces on the cone portion in both the Wang '900 Application and the Wang '583 Patent. Each conical surface of one flute 4 intersects the cylindrical surface of the immediately adjacent flute 4, forming a line at that intersection, and it is this connecting line that connects these two parallel flutes 4.

Viking also argues that Bannister in combination with Zhou or Welty and in further view of Korb renders obvious certain patent claims of the '583 Patent, but Viking's own technical expert witness admitted under oath at his deposition " [REDACTED]

[REDACTED]

[REDACTED] ”

Viking's Petition should fail as to each of the patent claims Viking challenged.

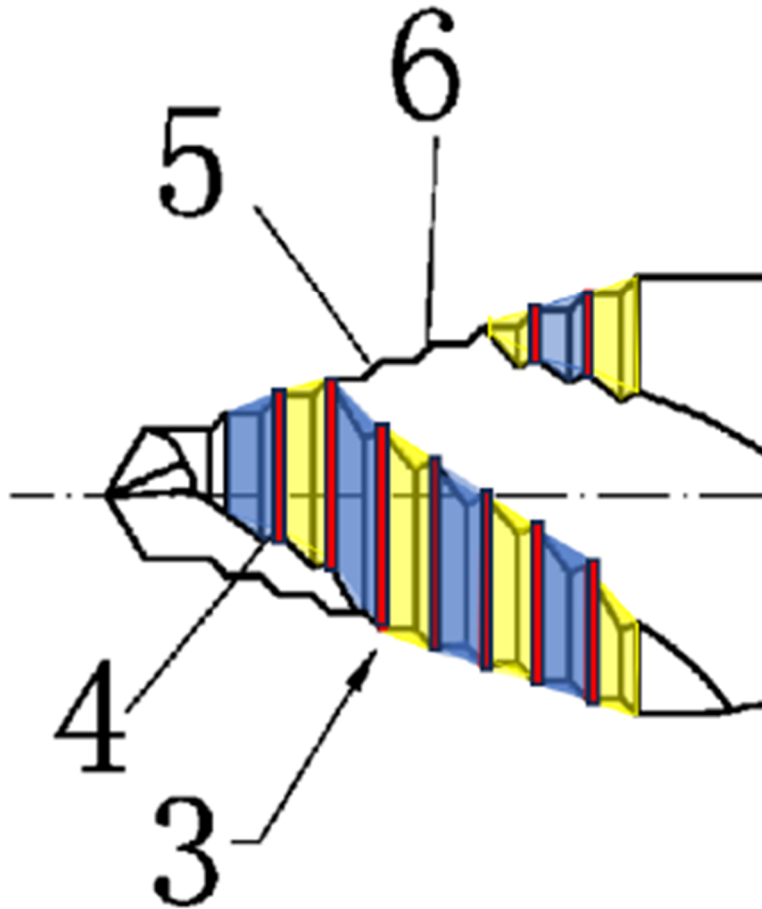
II. THE BOARD SHOULD REAFFIRM THE WANG '583 PATENT CLAIMS VIKING CHALLENGED IN ITS PETITION

A. Contrary to Viking's Reply, Wang Is Not Prior Art Because It Is Within Patent Owner's Claim of Priority

Viking's Reply badly mischaracterizes the law regarding priority, as well as Wang's argument regarding support in the Wang Priority Applications for the "spirally" patent claim element.

In this regard, Viking ignores two important rules often repeated in the case law. First, the test for sufficiency of a prior written description is "whether the disclosure of the application relied upon *reasonably conveys* to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*) (emph. added). This requires only "reasonable clarity," and the Federal Circuit has expressly rejected the argument that the application must "expressly or 'necessarily include'" the disputed claim element. *Hologic, Inc. v. Smith & Nephew, Inc.*, 884 F.3d 1357, 1364 (Fed. Cir. 2018); *see also, e.g., Inphi Corp. v. Netlist, Inc.*, 805 F.3d 1350, 1354–55 (Fed. Cir. 2015); *All Dental Prodx, LLC v. Advantage Dental Prod., Inc.*, 309 F.3d 774, 779 (Fed. Cir. 2002) ("While the contested language is not a model of clarity, it is also fairly simple and intelligible, capable of being understood in the context of the patent specification."). And second, the written description need not be as detailed for claim elements that are "known in the field of invention" and not necessary for an understanding of the subject matter sought to be patented. *Hologic*, 884 F.3d at 1362–63.

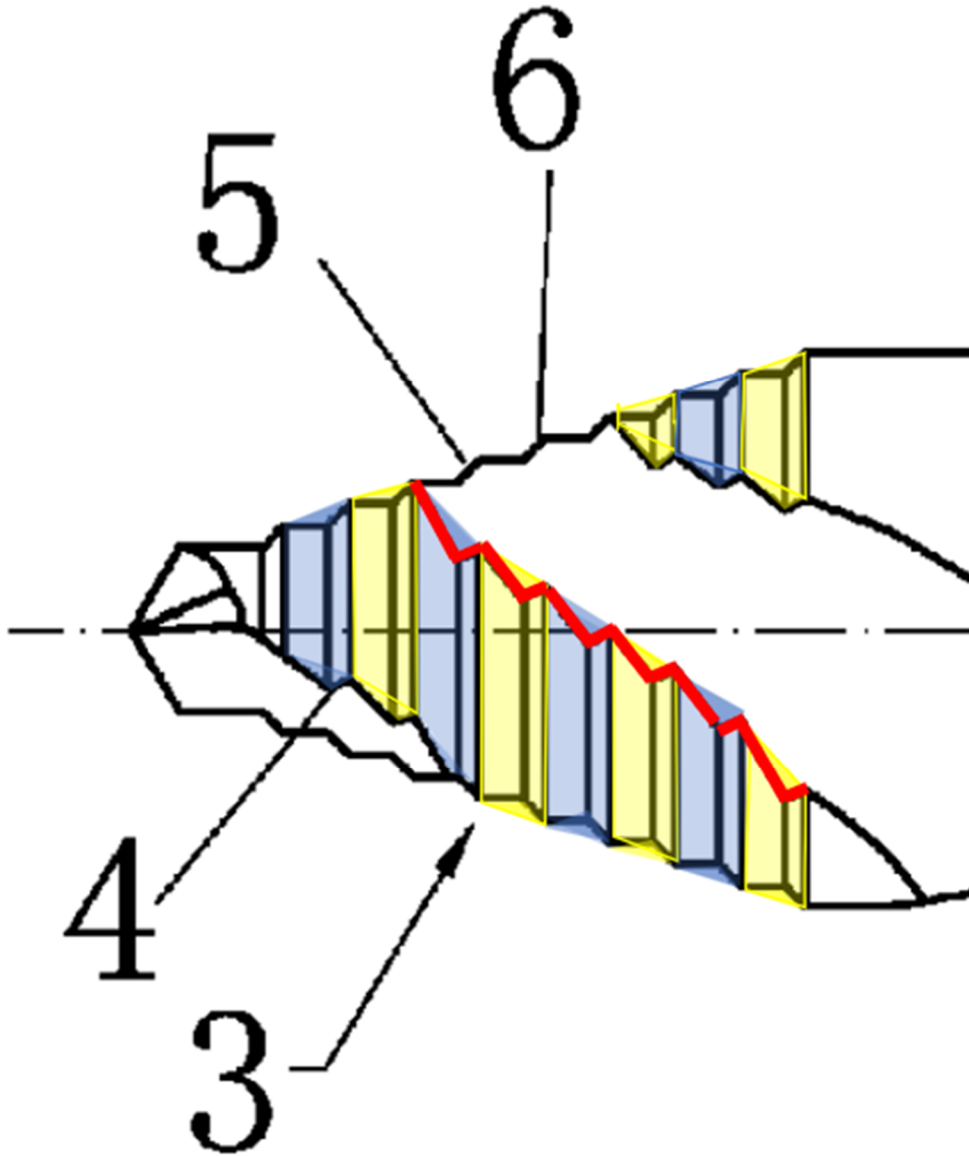
Here, the Priority Applications disclose that “[t]he connecting lines of the flutes form a spiral structure.” As explained in Wang’s Response, a POSA would readily understand this phrase to refer to the lines (highlighted in red below) that connect the adjacent parallel flutes (highlighted in alternating colors, below).



That is, the flutes are volumetric cutouts where drill bit material has been removed. As can be seen, each adjacent flute forms a generally cylindrical surface and a generally conical surface. The generally conical surface of one flute 4 intersects with the generally cylindrical surface of the next flute 4 to create a curved line, or line segment, which are highlighted in red above. These red lines connect

each flute 4 to the next adjacent flute 4. Each flute 4 is parallel to each other and must be immediately adjacent, that is, touching, for them to form the outer edges shown above. (Ex. 2034, ¶26). Viking's expert agrees with this interpretation. (Ex. 2118 at 43:23-44:10). However, he seems to claim that the Board construed the term "connecting line," which it did not. (Ex. 2118 at 20:25-21:4, 66:9-67:25).

By contrast, the "lines along the leading edges of the cutting blade groups" (Paper 43 at 5; Paper 2 at 29-30), outlined in red below, do **not** connect the flutes to one another or have any "connecting" role whatsoever with respect to the structures that the '900 Application refers to as "flutes." (Ex. 2034, ¶24).



Furthermore, the structure that Viking points to is the same structure that the Wang Priority Applications already described as the “step-like” “connecting lines of the first cutting blades 5 and the second cutting blades 6.” (Ex. 1009, ¶¶[0006], [0031]; Ex. 2118, ¶11). A POSA would not understand the “connecting lines of the first cutting blades 5 and the second cutting blades 6” and the “connecting lines of

the flutes” to refer to the exact same structure, particularly when they result in different shapes (step-like versus spiral structures), and they are defined by different features, flutes 4 versus cutting blades 5 and 6. (Ex. 2003, ¶19). Notably, in this context, the lines do actually connect the first cutting blades 5 and the second cutting blades 6. (Ex. 1009, Fig. 5).

It is irrelevant that the Priority Applications use the phrase “connecting lines” to refer to other features, in other contexts. The POSA’s understanding of the phrase “connecting lines” is contextual; that is, what a “connection” entails is different depending on the structures are being connected. The ‘583 Patent uses the term “connecting lines” in different contexts to refer to the spiral surfaces formed by adjacent flutes 4, the step-like surfaces formed between adjacent cutting blades, and the broken line in Fig. 8 connecting spaced-apart “top endpoints.” Unlike the ‘583 Patent’s other uses of “connecting lines,” the “top endpoints” in Fig. 8 clearly do not intersect one another, nor is there any surface that could plausibly be said to join the top endpoints together. The context is entirely distinct from when the ‘900 Application uses the phrase “connecting lines” to refer to the flutes 4, which, in fact, form pairs of generally cylindrical and generally conical surfaces that intersect with one another along lines that connect each pair of adjacent flutes 4.

The ‘900 Application further explains that “[t]he flank surface [3] adopts a ladder-like, structure so that the flank surface does not touch workpieces during

cutting.” (Ex. 1009, ¶[0031]). The step-like structure of the cutting edges is mimicked on the flank surface, yet the flank surface does not touch the workpiece. A POSA would understand this to mean that the conical surface must have an axial relief, in order for the flank surface to remain spaced apart from the workpiece.

Since the specification teaches that “[p]referably, the connecting lines of the flutes form a spiral structure” (Ex. 1009, ¶[0010]), the Priority Applications disclose axial relief. (Ex. 2034, ¶38).

A POSA is particularly likely to interpret “connecting lines of the flutes” in this manner, because providing axial relief is (by Viking’s own acknowledgement) “common and well-known in the drill industry” (Paper 1 at 49-50). *Hologic*, 884 F.3d at 1362 (affirming Board’s interpretation of priority application in light of fact that the disputed element was well-known in the prior art). To clarify, Wang is **not** (as Viking argues) attempting to use the knowledge of the POSA to make up for an absence of disclosure. (Paper 43 at 3). Rather, Wang is simply expressing that the sufficiency of a written description is tested “from the perspective of a [POSA].” *Inphi Corp.*, 805 F.3d at 1355 (quoting *Ariad*, 598 F.3d at 1351). A POSA would understand that axial relief is necessary to the functioning of the drill bit disclosed by Wang. (Ex. 2034, ¶11). As such, a POSA reading the ‘900 Application would expect to see some sort of provision for axial relief, and would readily infer that Wang was stating that axial relief was a preferred part of the disclosed invention

without the need for an illustration or thorough explanation that a given drill bit would contain axial relief following the cutting edges. *Id.*; see *Centrak, Inc. v. Sonitor Techs., Inc.*, 915 F.3d 1360, 1367 (Fed. Cir. 2019) (“the level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology”) (distinguishing *Lockwood v. Am. Airline, Inc.*, 107 F.3d 1565 (Fed. Cir. 1997) on the basis that the “specification at least mentions base stations and receivers that use ultrasound”).

Viking makes far too much of the fact that the Figures of the Priority Application appear to depict cutting blade groups perpendicular to the drill axis. A POSA would understand Figures 5 and 6 to be simplified drawings, rather than a teaching by the ‘900 Application as not employing axial relief. There is nothing remarkable about the use of simplified drawings; for example, Korb (Ex. 1012, Fig. 7) depicts a step drill design without axial relief (the cutting blades are depicted as being perpendicular to the drill bit axis).

the concept that Dr. Schmid describes. This is entirely performed through the trail angle.

It is not true that “axial relief is shown and discussed explicitly” where it is relevant. In addition to the Korb example above, Viking argues that Zhou (Ex. 1007) and Welty (Ex. 1008) disclose axial relief. (Ex. 1004 [474] at ¶¶ 94, 133-134). Yet, the Priority Applications disclose the provision of axial relief *more explicitly* than either Zhou or Welty.

In conclusion, Viking’s priority argument attempts to make a mountain out of a molehill. Figure 5 of the Priority Applications is merely a simplified patent drawing, which is fully explained by the specification of the Priority Applications.

B. Bannister in View of Zhou and/or Welty Does Not Render Obvious Any Wang ’583 Patent Claims

It is undisputed that Bannister does not teach the use of conical cutting edges. Rather, Petitioner argues that it would have been obvious to make Bannister’s intermediate cutting edges conical instead of perpendicular to the axis. (Paper 43, 8). This is not true.

First, Petitioner argues that “a POSA even as early as 2016 would recognize that Bannister’s description of long chips carrying out fine chips is likely not accurate.” (*Id.*, 9). Dr. Schmid opines “Bannister speaks in generalities about how it forms chips that are unlikely to be true in all circumstances in which Bannister’s drill might be used (e.g., different cutting tool materials, workpiece materials,

geometries such as rake angle and relief angles, feed rates, etc.).” Ex. 1044, ¶20. Viking appears to suggest that a POSA would disregard the teachings of Bannister, because they are not accurate in all cases.

Rather, it is clear that Bannister was intended for use with “soft metal[s].” (Ex. 1006, 2:6-12). A POSA would know that all tools have their limitations, and are designed to optimally operate in specific scenarios. Although the understanding of twist drills has increased drastically since 1940, Bannister’s teachings were based on the inventor’s observations in the specific scenario when cutting soft metals. Dr. Schmid does not challenge Bannister’s teachings in this context. (*See generally* Ex. 2118 at 70:19-78:14). Considering the reasonable bounds of operation defined in Bannister, a POSA would not likely disregard its teachings to enact a complete redesign that defeats Bannister’s principle of operation (i.e., using a beveled cutting edge to generate long chips that carry out fine chips created by the straight intermediate blades).

One must also question why a POSA would be motivated to use Bannister to arrive at the claimed invention, if not for improper hindsight. Indeed, Viking’s own expert acknowledged that Bannister is old, erroneous, and lacks adequate disclosure for a POSA:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

(Ex. 2118 [Schmid Tr.], 78:5-14; 75:23-78:14).

Petitioner further acknowledges that Bannister does not teach major and minor cutting edges “defined by the intersection of the conical first step surface [or cylindrical second step surface] and the sidewall of the spiral flute.” (Paper 43, pp. 11-14). In response, Petitioner argues that the claims do not require “curved” major and minor cutting edges. This misunderstands Wang’s argument. Curved cutting edges are not an unclaimed element, but a structural test of when the claim limitations above are met. (Ex. 2034, ¶51). If the above limitations are met, the resulting drill bit will necessarily have curved minor cutting edges. (Ex. 2034, ¶51). If the drill bit does not have curved minor cutting edges, then the minor cutting edges are not “defined by the intersection of the cylindrical second set surface and the sidewall of the spiral flute,” as required by independent claims 1 and 8. (*Id.*; Ex. 1001, Cls. 1, 8).

Petitioner’s cherry picking of Bannister is inconsistent with “longstanding principle that the prior art must be considered for all its teachings, not selectively.” *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019). Furthermore, and contrary to Viking’s arguments, there is no motivation to combine, when the benefits of the combination would be redundant with one another, or would render the invention inoperable for its disclosed purpose. *See, e.g., S.-Tek Sys., LLC v. Engineered Corrosion Sols., LLC*, 748 F. App’x 1003, 1007 (Fed. Cir. 2018) (no motivation to combine based on “redundant functions” of prior art references); *Medtronic, Inc. v. Teleflex Innovations S.a.r.l.*, 69 F.4th 1341, 1347 (Fed. Cir. 2023) (inoperable).

Petitioner’s cited cases do not support its position. *In re Kerkhoven*, 626 F.2d 846, 850 (CCPA 1980). *Kerkhoven* involved circumstances combining two compositions with one another, when the combination “require[d] no more than the mixing together of two conventional spray-dried detergents,” and there was evidence that the combination would be superior to the ingredients standing alone. *Id.* It does not apply to mechanical arts or Petitioner’s rationale for modifying Bannister by Zhou or Welty, particularly where Petitioner’s combination requires the Board to ignore express teachings of Bannister, in order to provide benefits that Bannister already has. *Henny Penny*, 938 F.3d at 1332.

C. Bannister in View of Zhou and/or Welty and Korb Does Not Render Obvious Any Wang ’583 Patent Claims

Viking challenges the validity of Claims 18 and 22 only by adding the teachings of the step drill configuration of Korb to Bannister in view of Zhou and/or Welty. Yet, Korb is a step drill, and Viking does not explain why a POSA would have any motivation to combine or any reasonable expectation of success in the combination of a step drill with a twist drill.

Simply put, a step drill is **not** compatible with the functions of a twist drill. (Paper 43, 17). Viking's claim that stepped-tip drills operate under the same principles as step drills is simply not true. Even according to Viking, a step drill's purpose is to make one of a variety of possible hole sizes in a workpiece having a "thickness equal to or less than the step thickness." (Ex. 1023, p. 50 (96)).

Quick Release 1/4" Hex Shank



TYPE 78-QR HEX SHANK STEP DRILLS						
Part#	Size	Hole Sizes	No. Range	Shank Size	Step Increments	Step Thickness
01401	1	13	1/8 - 1/2"	1/4"	1/32"	1/8"
01402	4	6	3/16 - 1/2"	1/4"	1/16"	3/8"
01403	8	12	3/16 - 7/8"	1/4"	1/16"	1/8"
01404	3	9	1/4 - 3/4	1/4"	1/16"	5/32"
01409	11	2	7/8 - 1-1/8"	1/4"	27/64"	9/64"
01412	7	11	1/4 - 7/8"	1/4"	1/16"	1/16"
01413	1/4 A	16	1/4 - 1-1/8"	1/4"	1/16"	1/16"

As such, a step drill cuts with one and only one step at a time. (Ex. 2118 at 16:11-21). Accordingly, a POSA would not look to the teachings of a step drill in order to modify a twist drill. That is particularly true here, where (as explained below) the benefit of the claimed limitation is the dispersal of cutting force between

the various cutting blades when each of the cutting blades is engaged in the workpiece simultaneously. (Ex. 2034, ¶163).

III. STRONG EVIDENCE OF SECONDARY CONSIDERATIONS OVERCOMES VIKING’S OBVIOUSNESS CHALLENGES

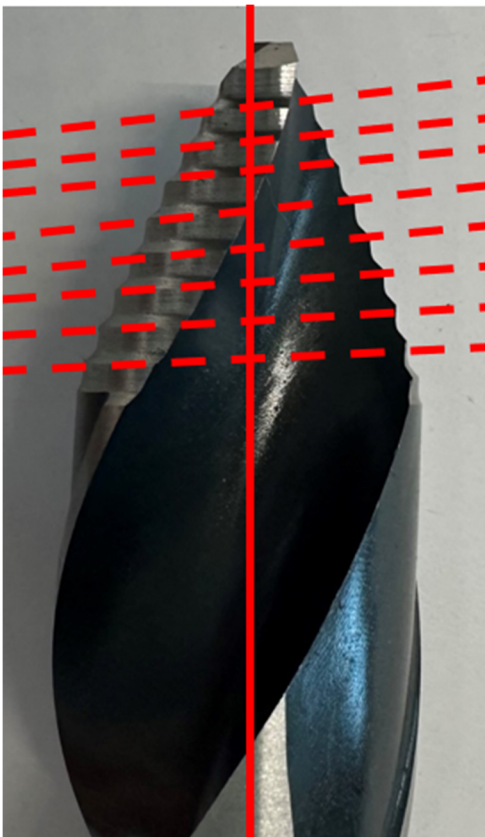
As an initial matter, Viking’s argument that Wang does not allege secondary considerations in response to Grounds 1 and 2 is simply incorrect. (Paper 43 at 18 n.4). Secondary considerations must be considered in every case where present. *Apple Inc. v. Samsung Elecs. Co., Ltd.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016). And, the secondary considerations that Wang points to apply equally with respect to each of Viking’s obviousness grounds.

A. Wang Is Entitled To A Presumption Of Nexus

Wang is entitled to a presumption of nexus. Wang presented considerable evidence that the Hyper-Step drills are covered by the challenged claims, including extensive claim charts submitted along with the report of his expert, William Endres. (Ex. 2034, ¶¶125-148; Exs. 2074-2089; Exs. 2090-2097). These claim charts unambiguously show that the Easy Boost drill bits (which include Matco’s Hyper-Step and Astro’s TurboStep drill bits) embody the patent claims and are co-extensive with them. The claim charts likewise demonstrate that Viking’s Vortex Point drill bits infringe the ‘583 Patent’s claims.

Viking claims that Endres “was unable to testify that the Hyper-Step drills have axial relief because he never took measurements of the drills.” (Paper 43 at 26

[citing Ex. 1046, 33:6-8]]. Endres never so testified. Viking’s cited portion of Endres transcript has nothing to do with the proposition that they cite it for. (Ex. 1046, 33:6-8 [“applying the flutes 4, the flank surface is largely replaced with the flutes 4. Q Can I ask you now to look at figure 8?”]). In any case, the fact that the Easy Boost drill bits exhibit axial relief is readily apparent from a visual examination, and Endres confirmed that the products he provided claim charts for exhibit axial relief.



Viking completely misstates the requirement for demonstrating that the Hyper-Step products are co-extensive with the claims. Co-extensiveness requires a showing that there are no critical unclaimed features that “materially impacts the product's functionality. *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1375 (Fed.

Cir. 2019). Viking argues that co-extensiveness is not met because the “alleged differences between the claims and the prior art at issue are extremely minor.” (Paper 43 at 26). This has nothing to do with co-extensiveness. Tellingly, Viking fails to point to a single unclaimed feature of the product that materially affects the product’s functionality, pointing instead to marketing and a warranty which is offered by Astro and Matco—but not Viking.

Viking’s claim is also a gross over-simplification of the claim features that distinguish the ‘583 patent from the prior art. The ‘583 patent’s novelty lies in its unique drill tip configuration, which combines the conical portion of a twist drill with the plurality of composite cutting blades of a step drill. What Viking describes as “minor differences in the geometry” (in combination with the other claimed features) are in fact crucial to the operation of the claimed invention and directly relate to why the ‘583 patent is more than simply placing a step drill on the top of a twist drill.

Dependent claims 18 and 22 recite the limitation that “the cutting tips of the plurality of composite cutting blade groups are formed spirally on a cone portion exterior from a front end of the cone portion to a rear end of the cone portion.” This spiral sweep is critical to the dispersal of cutting force between the various cutting blades. It is why the claimed invention is able to achieve its highly touted functions of a faster cutting time, improved durability, improved chip evacuation, and reduced

drill bit walking. (Ex. 1001, p. 14, col. 9:14-31; Ex. 2034, ¶ 164). Notably, even according to Viking, Wang’s benefits are over and above those that may be provided by a simple split point tip geometry (which is also claimed by dependent claim 5 and independent claim 8). [REDACTED]

[REDACTED] (Ex. 2059 at p.4 [REDACTED]; Ex. 2025 at p.1 [VORTEX-POINT tip design cuts 45% faster...]). Even Mr. Fulk acknowledges as much. (Ex. 2119 at 112:25:113:8).

Numerous claimed features are absent from these specialty drill bits as well as the other references that Viking characterizes as twist drills, including this element. Similarly, it is undisputed that numerous claimed features are absent from each of Viking’s step drill references, including the following limitations:

- “the diameter of the last composite cutting blade group located at the rear end of the cone portion immediately adjacent to the cylinder portion is equal to the cylinder portion diameter” (Claim 1[O], 8[O]),
- “the operation portion is configured to disperse a cutting force on each of the plurality of composite cutting blade groups within a drill hole of a workpiece when a least a portion of the cylinder portion is also within the workpiece” (Claim 14).

- “the cylinder portion is longer than the cone portion” (Claims 15 and 19).

(Ex. 2119 at 20:2-21:14).

Contrary to Viking’s arguments, each of these limitations is diametrically opposed to the cutting operation of a step drill. Viking has argued that “faster cutting with reduced torque” was known in the drilling art, because step drills were well recognized for providing these advantages. (Ex. 1045, ¶24). But, as noted above, step drills have a completely different cutting application from twist drills. (Ex. 2118 at 16:14-21). Contrary to Viking’s claim, end users do not use step drills to reduce the torque relative to standard-tipped twist drill bits. Rather, end users use step drills to drill holes of a predetermined diameter in thin workpieces. They necessarily do so slowly to feel the number of steps that pass through the workpiece to determine the resulting hole diameter. Step drills are not recognized for their cutting speed by POSAs, particularly not when drilling through the thick and hardened workpieces that the ‘583 Patent is directed to. Viking’s arguments in this regard are absurd.

Thus, contrary to Viking’s claim, even if Wang is not entitled to a presumption of nexus (which is is), the evidence indicates that “the evidence of secondary considerations is the direct result of the unique characteristics of the claimed invention.” *Fox Factory* at 1375.

B. The Evidence Of Secondary Considerations Is Strong

1. Copying

Viking attempts to overcome Wang's strong evidence of secondary considerations by relying on the self-serving, largely unfounded, and unpersuasive testimony of its own Director of Engineering, Taylor Fulk. (Ex. 1045). *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) (noting that a witness's interest in the outcome of the case is a factor in assessing the probative value of a witness's opinion). Notably in this regard, Viking fails to establish that Mr. Fulk would qualify as a POSA and does not offer Mr. Fulk as an expert.

Far from discounting Wang's evidence, Mr. Fulk's testimony confirms what was clear from the documents: Viking copied the Hyper-Step drill bits [REDACTED]
[REDACTED]
[REDACTED]. (Ex. 1045, ¶¶4, 6, 9).

Viking's self-serving and post-hoc claim that they "did not consider the product to be particularly unique" is uncorroborated by contemporaneous evidence and belied by the fact that their own customer's statement "[REDACTED]
[REDACTED]" (Ex. 2055, p.1). [REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]. (Ex. 2059 at p.4). Viking cannot simply hand-waive these documents out of existence.

Nor can Viking's attempts to point to minor differences in step lengths, step diameters, overall tool length, and flute length undue Viking's admission that it, in fact, copied the Hyper-Step design. (Ex. 1045, ¶11). Notably, none of these features have anything to do with the claims of the '583 patent, and are among the features that a POSA would expect to vary depending on drill bit diameter. (Ex. 2034, ¶¶152, 157-159). Further, Viking disingenuously points to a variation in the 7/64" drill bit, one of the six smallest sizes which Wang acknowledges do not practice the claimed invention. (Ex. 1045, ¶13).

2. Industry Praise

Here, the best evidence of industry praise comes from Viking and Kimball themselves. Viking's only attempt to overcome this evidence is to argue that "these internal documents do not praise technology captured by the challenged claims, but the product as a whole." (Paper 43 at 22). But, as noted above, the Hyper-Step product embodies the claims of the '583 patent and is co-extensive with it. There is thus no difference between the "technology captured by the challenged claims" and the "product as a whole," particularly where [REDACTED] (See, e.g., Ex. 2055). As explained above, the benefits of the claimed invention that Kimball and Viking

acknowledge are directly tied to the claim elements which differentiate the ‘583 patent from the prior art. Indeed, according to Viking, the patented products have the following benefits (Ex. 2025, p.1):

- Stays sharp up to 4x longer compared to conventional and other specialty tip designs
- Multi-stepped tip acts like a step drill, allowing for laser like holes through sheet metal and prevents walking on curved surfaces
- VORTEX-POINT tip design cuts 45% faster & excels on sheet metal and hardened metals like broken fasteners.

Each of these benefits describes the merits of the claimed invention, over and above that of the prior art. (Ex. 2034, ¶¶163-164, 179-180).

C. Commercial Success

Viking attempts to argue against the commercial success of the Hyper-Step and Vortex Point products by arguing that Wang failed to contextualize these sales to those of the twist drill industry as a whole. This is not required to demonstrate commercial success. *See J.T. Eaton & Co., Inc. v. Atlantic Paste & Glue Co.*, 106 F.3d 1563, 1566, 1572 (Fed. Cir. 1997) (affirming a finding that “sales evidence ... shows [strong commercial] success,” where the “sales evidence” consisted solely of the patentee’s “\$17 million of sales from 1979 through 1984, and its \$4 million of annual sales from 1985 through 1989”).

In support of its position, Viking again offers the completely unsupported testimony of its Director of Engineering. Viking claims that the overall twist drill market is conservatively estimated to be over \$300 million per year. (Ex. 1045, ¶16).

The problem with Viking’s argument is that

[REDACTED]

Viking’s attempts to diminish the commercial success of the patent-practicing products ignores several key points: (1) the products are sold as “specialty” products and do not compete with standard, general use twist drills (*see* Ex. 2025, p.1 [comparing Vortex Point bits to “conventional and other specialty tip designs”]); (2) the products are sold at a much higher asking price, even as compared to other

specialty twist drill products (Ex. 2036, ¶11); and (3) the profit per sale for the practicing products is considerably higher, even than other specialty twist drill designs; and (4) despite the price premium, demand for the patented drill bits has increased year-over-year during a time when overall drill bit sales were decreasing (*Id.*, ¶¶12-14; Ex. 2039). *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1350 (Fed. Cir. 2012) (market premium for patented product over prior art demonstrated commercial success).

Indeed, between 2019 and 2021, A



Even Viking's President of Sales admitted that



. Ex. 2071 at 87:2-17.



The Easy-Boost and Vortex Point drill bits are certainly commercially successful. (Ex. 2036, ¶11; Ex. 2119 at 84:6-85:17).

This is especially impressive, due to the premium price of the patent-practicing drill bits. For example, Kimball Midwest sells its sets of Ultra Step Drill Bits (a white-label of Viking's Vortex Point drill bits) for \$385.00 and its 4 and 8-piece sets of the Silver & Deming sizes for \$404 and \$854, respectively. (Ex. 2058,

pp. 2, 10). By contrast, Kimball’s “standard” maintenance length drill sets retail for \$294, and its “standard” 4 and 8-piece sets of the Silver & Deming sizes retail for \$294 and \$554. (*Id.*, pp. 10-11). In other words, Kimball charges a 30-50% premium for its patent-practicing products. This is consistent with the premiums charged by Tsteigen, Astro, and Matco. (*See, e.g.*, Ex. 2071 at 87:19-24; Ex. 1048 at 69:2-15 [REDACTED] and 85:23-85:2 [REDACTED] [REDACTED]).

IV. CONCLUSION

For the foregoing reasons, Mr. Wang respectfully requests the Board find that Viking failed to demonstrate by a preponderance of evidence that the challenged claims are unpatentable.

Dated: March 12, 2024

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. §§ 42.24(a)(1)(i), 42.24(b)(1), and 42.24(d), the undersigned certifies that, according to the “Word Count” tool in Microsoft Word, which was used to prepare this paper, the number of words in this **PATENT OWNER’S SUR-REPLY** is 5,158.

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CERTIFICATE OF SERVICE UNDER 37 CFR § 42.6(e)

I hereby certify that a true copy of the foregoing **PATENT OWNER'S SUR-REPLY** has been served in its entirety this 27th day of February 2024, by electronic mail on Petitioner's lead counsel, as follows:

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