**UNITED STATES DISTRICT COURT**
**FOR THE DISTRICT OF COLUMBIA**

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| **HITACHI KOKI CO., LTD.,** | ) | |
| **Plaintiff,** | ) | |
| **v.** | ) | **Civil Action No. 07-1504 (ESH)** |
| **JOHN J. DOLL, Acting Director, United States Patent and Trademark Office,** | ) | |
| **Defendant.** | ) | |

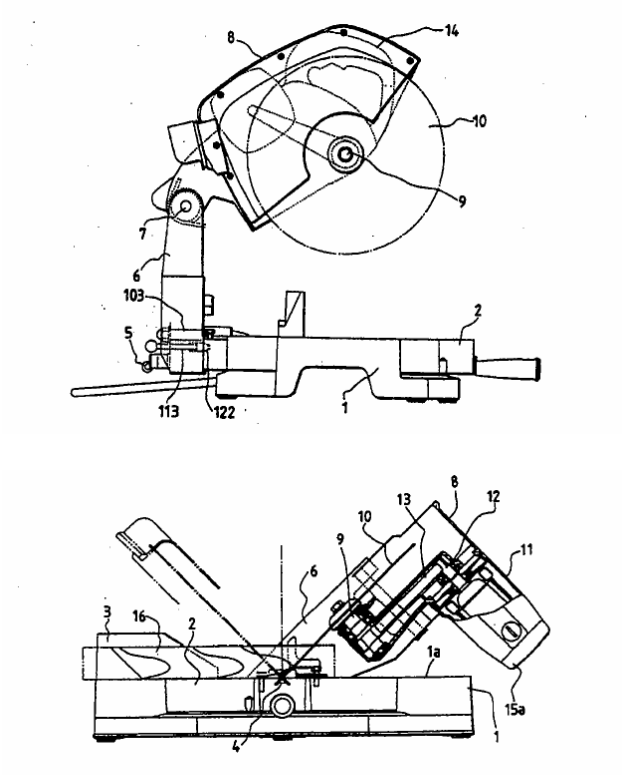
## MEMORANDUM OPINION

Plaintiff Hitachi Koki USA, Ltd. ("Hitachi") seeks review under 35 U.S.C. § 145 of the denial by the United States Patent and Trademark Office's Board of Patent Appeals and Interferences ("Board") of Hitachi's application for a patent for its desktop cutting machine with a tiltable saw ("the Hitachi device"). After denying the parties' cross-motions for summary judgment, *see Hitachi Koki Co., Ltd. v. Dudas* ("*Hitachi I*"), 556 F. Supp. 2d 41, 49 (D.D.C. 2008), the Court conducted a trial on April 23 and 24, 2009, where the parties introduced expert testimony. Based on the entire record and the relevant law, the Court finds that the subject matter of Hitachi's patent would have been obvious to a person having ordinary skill in the art, and therefore it affirms the Board's denial of Hitachi's patent under 35 U.S.C. § 103(a).

## BACKGROUND

On January 20, 1995, the United States Patent and Trademark Office ("PTO") issued U.S. Patent Number 5,425,294 ("the '294 patent" or "the Hitachi patent") to Hitachi, as assignee of named inventors Shigeharu Ushiwata and Ryuichi Imamura, for a "desk-top cutting machine with tiltable saw." (*See* Trial Joint Exhibit ["Jt. Ex."] 1 at 1.) This saw is depicted in the '294

patent in the following drawings, among others:




(*See id.*) The saw assembly is mounted atop a pivot point, so that the user pushes the saw downward in order to cut into the workpiece, which rests on a turntable that is part of the saw's base. The Hitachi device can be used to make (1) "miter" cuts, where the user first rotates the workpiece in the turntable and then cuts with the blade in a "zero-tilt" position perpendicular to the workpiece surface; (2) "bevel" cuts, where the workpiece is not rotated but the saw is tilted downward to the left or right from zero-tilt before cutting, so that the blade will intersect the workpiece surface at an acute angle; and (3) "compound" cuts, where the user both rotates the workpiece and tilts the saw assembly before making the cut. (*See* Jt. Ex. 11 (Decl. of Paul Hatch ["Hatch Decl."]) at 3-4 ¶ 7.) Devices that can make bevel cuts in one direction are known as "single-bevel" miter saws, while those (like Hitachi's) that can make bevel cuts in both directions are known as "dual-bevel" miter saws. (*Id.* at 4 ¶ 8.) Workpieces whose ends have

been cut at a 45° angle can be fit together to form right-angled corners.

On June 20, 1997, pursuant to 35 U.S.C. § 251, Hitachi voluntarily surrendered the '294 patent and filed Reissue Application 08/879,517 ("the '517 application"), adding a number of patent claims. Reissue applications are examined in the same manner as newly submitted applications and are thus subject to the same requirements that govern newly submitted applications. *See* 37 C.F.R. § 1.176(a). After reviewing Hitachi's reissue application, the PTO Examiner ("Examiner") denied Claim 1, among others, as obvious under 35 U.S.C. § 103(a) and therefore not unpatentable. (*See* Jt. Ex. 4 (Feb. 2, 2005 PTO Final Office Action) ["Examiner's Decision"] at 2.) Plaintiff appealed to the Board but requested review only of Claim 1, leaving that as the sole claim at issue in this case. (Jt. Ex. 2 (Oct. 19, 2006 Board Decision on Appeal) ["Board's Decision"] at 3 ("For the convenience of the Board, Appellant will argue the patentability of independent claim 1. The other claims stand or fall together with claim 1." (quoting Hitachi's brief)).)

Claim 1 consists of eight elements (hereinafter, "Element 1" through "Element 8") and reads as follows, with numbers added for ease of reference:

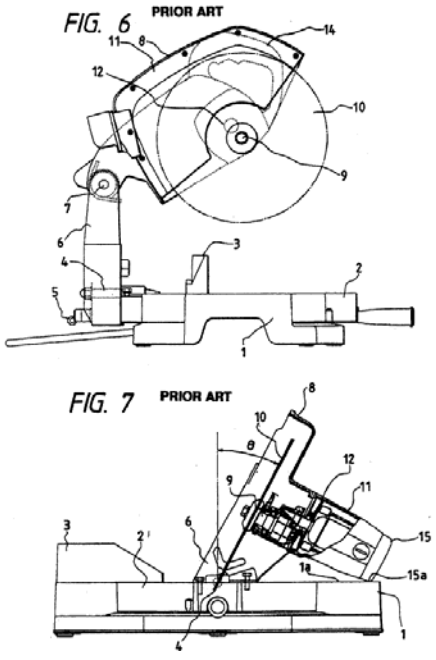
> A desk-top cutting machine, comprising:
>
> (1) a base on which a workpiece to be cut is supported, said base including a top surface;
>
> (2) a turntable rotatably disposed in said base and including a top surface;
>
> (3) a holder supported by said turntable for tilting transversely in opposite directions about a zero-tilt angle position;
>
> (4) a circular saw blade;
>
> (5) a saw shaft located above said holder for supporting said saw so that said saw is swung up and down relative to said base, about a pivot shaft;
>
> (6) a circular saw assembly having a motor covered by a housing;

(7) a motor shaft of said motor being disposed in parallel with and above said saw shaft;

(8) transmission means through which said motor shaft is connected to said saw shaft so that an axis of said motor shaft is shifted from an axis of said saw shaft by a distance which is greater than or equal to the radius of said circular saw blade, wherein when said holder is tilted in either of said opposite directions by an angle greater than or equal to 45 degrees with respect to the zero-tilt angle position, said housing does not contact said top surface of said base.

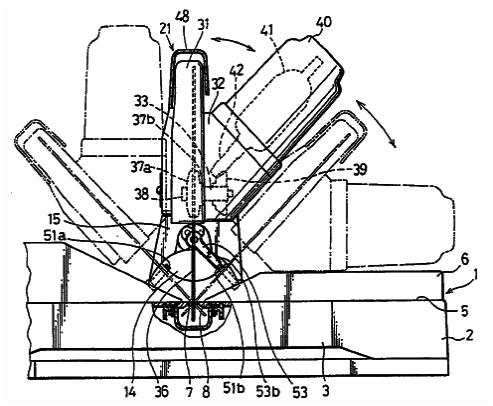
(Jt. Ex. 1 at 9.)

The Board affirmed the denial of Claim 1 in light of five prior art references. (*See* Board's Decision at 12.) The first reference was what Hitachi's application recognized as prior art ("Applicant's Admitted Prior Art" or "AAPA"), as depicted in Figures 6 and 7 of the '294 patent and disclosed in lines 11 through 33 of column 1 of the patent specification. (Jt. Ex. 1 at 4 (figs.6 & 7), 8.) Resembling a conventional single-bevel desktop miter saw, the motor shaft of the AAPA is "disposed in parallel with" the saw shaft and connected through "toothed engagement," so that the motor projects perpendicularly from one side of the saw assembly, near the center of the blade:



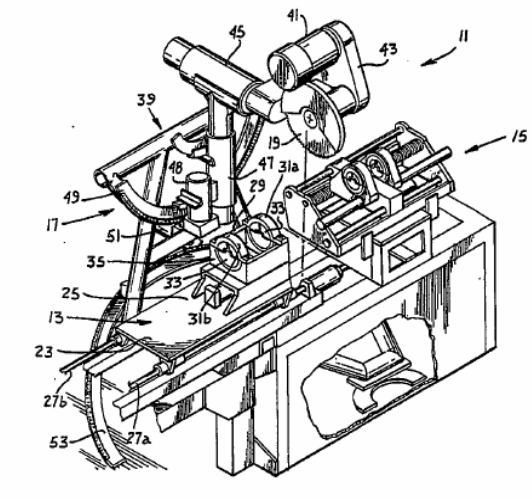

(*Id.*)

The second reference discussed was U.S. Patent No. 5,357,834 (filed May 18, 1993), issued to Ito *et al*. ("Ito") on October 25, 1994. Ito discloses a dual-bevel desktop miter saw whose motor shaft projects upward at an angle from the center of saw blade and transmits power to the saw shaft using beveled gears:




(*See* Jt. Ex. 7 at 1.)

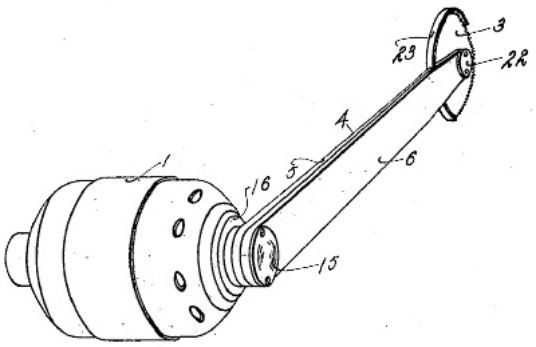
The third reference was U.S. Patent No. 4,574,670, issued in 1986 to Johnson ("Johnson"). The patent describes a "multiple angle cutting apparatus" and features a motorized saw blade mounted on a positioning mechanism that can rotate and tilt:




(*See* Jt. Ex. 8 at 1.)

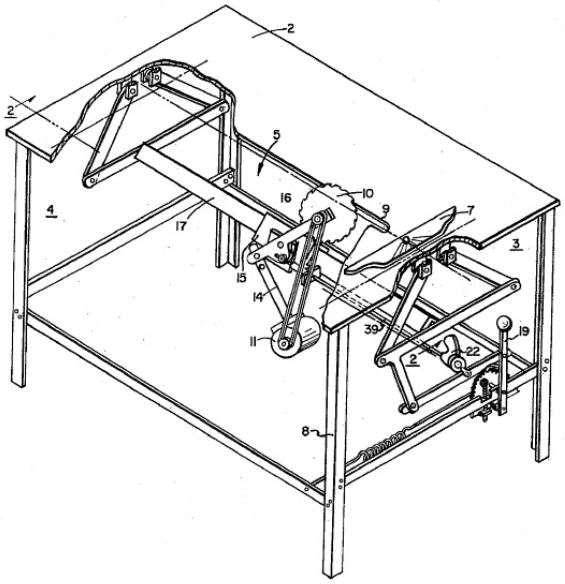
The fourth reference was U.S. Patent No. 1,417,669, issued in 1922 to Langworthy

("Langworthy"), which describes a motorized surgical saw:




(*See* Jt. Ex. 9 at 1.)

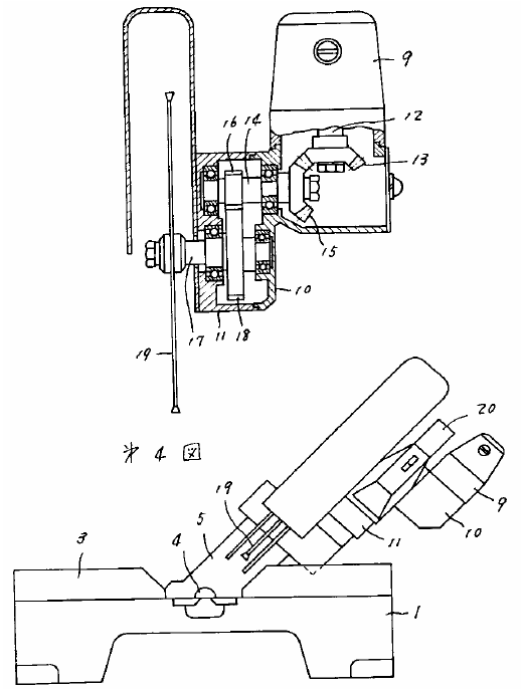
The fifth reference was U.S. Patent No. 3,013,592, issued in 1961 to Ambrosio *et al.* ("Ambrosio"), which describes a "tilting table saw" featuring a motorized blade mounted underneath the cutting surface:




(*See* Jt. Ex. 10 at 1.)

The Board also discussed a sixth reference, Japanese Utility Model Application (OPI) No. 49901/88 ("JPN '901") (also known as Japanese Laid-Open Utility Model Publication No. 63-49901), which both the '294 patent and Ito "recognized [as] prior art designs." (Board's Decision at 20; *see* Jt. Ex. 1 at 8 (col.1 ll.35-36); Jt. Ex. 7 at 11 (col.1 ll.17-20).) JPN '901, a

dual-bevel miter saw that was also designed by Ushiwata, permits unobstructed 45° bevel cuts in both directions by moving the motor shaft upward from and perpendicular to the saw shaft, such that the motor shaft is parallel to the saw blade:




(*See* Jt. Ex. 13 (Decl. of Shigeharu Ushiwata ["Ushiwata Decl."]) ¶ 15; *id.*, Ex. D at 9.)

The Board found that Ito and the AAPA described every aspect of the desktop cutting machine defined in Claim 1 of the Hitachi patent except for Elements 7 and 8.[1] (*See* Board's Decision at 12-13.) The Board then considered what a person of ordinary skill in the art would have learned from the combined teachings of either the AAPA or Ito, coupled with Johnson, Ambrosio, and Langworthy. (*Id.* at 14-15.)

First, the Board concluded that both the AAPA and Ito's discussion of prior art would have taught an ordinarily skilled person that the conventional single-bevel saw assembly would prevent users from making cuts at 45° to either side of "zero-tilt," because on one side, the motor

[1] But as discussed below, the Court finds that the AAPA also teaches Element 7, a motor shaft that is parallel to and above the saw shaft. *See infra* Section II(C)(1).

housing would hit the surface of the workpiece or base, thus requiring a user to rotate the workpiece 180° in order to make a bevel cut in the opposite direction. (*See* Board's Decision at 15.) Next, an ordinarily skilled person would recognize that Ito's solution to that problem requires turning the motor shaft upwards at an angle to the saw shaft and transmitting power to the saw shaft through angled beveled gears. (*Id.*) In addition, the hypothetical person of ordinary skill would learn that while JPN '901's placement of the motor shaft upwards from and perpendicular to the saw shaft similarly permits dual-beveling, it would also require an expensive multistage transmission system. (*Id.* at 15-16.)

The Board then determined that Johnson teaches that a cutting machine whose motor shaft is parallel to the saw shaft could be used to make ±45° bevel cuts without hitting the workpiece or base and without rotating the workpiece. (Board's Decision at 16.) The Board next considered Langworthy and found that it also disclosed parallel motor and saw shafts that were connected by transmission means and displaced by a least one blade radius. (*Id.* at 18.) Although Langworthy is a handheld surgical saw, it was found to teach that "[t]he saw may be of various sizes, [and the guard is also made in various sizes] complementary to the saw . . . and these elements may be changed at will, to adapt them for different uses," and that the arm connecting the saw and motor could be manipulated "to attain cuts at various angles . . . with facility and accuracy in the operations." (*Id.* at 19 (quoting Jt. Ex. 9 at 3 (col.3 ll.49-53, col.4 ll.69-74)).) The Board also found that although Langworthy did not possess a base or other workpiece support, an ordinarily skilled person would have understood the human body to be Langworthy's "workpiece," and that because it would not be feasible or desirable to manipulate the patient's body, the ability to make angled cuts would depend upon the ability to change the angle of the saw without obstruction by the body. (*Id.* at 17, 19.) Finally, the Board determined

that Ambrosio similarly would have taught a person of ordinary skill that unobstructed ±45° bevel cuts could be made without rotating the workpiece if the motor and saw shafts were parallel and displaced by at least one blade radius. (*Id.* at 19-20.) The Board found that "[i]n light of the combined prior art teachings, . . . persons having ordinary skill in the art would have had the instruction and the motivation to make and use a desk-top cutting machine having the design and/or construction claimed." (*Id.* at 20.) Accordingly, the Board affirmed the Examiner's rejection of Claim 1 as obvious and unpatentable. (*Id.* at 24.)

On December 15, 2006, plaintiff requested rehearing, arguing that the Board misunderstood the teachings of Johnson with respect to its bevel-cutting capabilities and that Langworthy and Ambrosio were not analogous art. (*See* Jt. Ex. 15 (Hitachi's Req. for Reh'g) at 1-4.) On June 21, 2007, the Board denied rehearing and emphasized that the rejection of Claim 1 was consistent with the Supreme Court's intervening decision in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007). (*See* Jt. Ex. 3 (Board Decision on Req. for Reh'g) at 4-6.) Thereafter, on August 21, 2007, plaintiff brought suit pursuant to 35 U.S.C. § 145, requesting that this Court reverse the decision of the Board and find that Hitachi is entitled to reissuance of its patent for the invention set forth in Claim 1. [*See* Dkt. No. 1.] On December 19, 2007, defendant filed a motion for summary judgment seeking affirmance of the Board's decision as supported by substantial evidence. [*See* Dkt. No. 7.] On February 13, 2008, plaintiff filed a cross-motion for summary judgment, supported by several new witness declarations that explained why Claim 1 was not obvious and that addressed "secondary considerations" of non-obviousness (*i.e.*, the commercial success of plaintiff's design, its copying by competitors, and the fact that it filled a long-felt but unmet need). [*See* Dkt. No. 12.] On May 29, 2008, this Court denied the cross-motions and permitted plaintiff to submit the declarations insofar as they

related to issues previously presented to the PTO, but excluded evidence of the secondary considerations of commercial success and copying because they had not been raised before the PTO. *Hitachi I*, 556 F. Supp. 2d at 47-48 & n.3, 49. The Court also allowed the parties to conduct discovery regarding obviousness and permitted the PTO to introduce expert testimony to rebut plaintiff's experts. *See id.* at 48 n.4.

The Court then conducted a bench trial on April 23 and 24, 2009. At the outset, the Court permitted Hitachi to introduce new evidence of the secondary consideration of "long-felt but unsolved need," denying defendant's motion to strike such evidence on the grounds that the issue had been expressly considered by the PTO. (*See* Examiner's Decision at 10 ("Applicant argues that motivation to pivot 45° both ways was known for years and yet the only solution was the overly expensive Ito '834, and therefor[e] the current solution is unobvious. However, Applicant has not proven this to be a longstanding problem that others (different assignees) have failed at.").) The Court then heard testimony from three witnesses.[2] Plaintiff's witness Gary Katz, an expert in the field of finish carpentry,[3] testified that the Hitachi design met a long-felt need among carpenters, because it enabled them to make bevel cuts in opposite directions on a workpiece without having to "helicopter" it (*i.e.*, rotate it 180°) or flip it over onto its face. (*See generally* Trial Tr. ["Tr."] at 24-70, 339-41; Jt. Ex. 12 (Decl. of Gary Katz ["Katz Decl."]) ¶ 10.) Plaintiff's witness Paul Hatch, an expert in the field of power tool design, testified about the prior state of the art with respect to miter saws, the features of the Hitachi invention, the

[2] In addition, the Court admitted into evidence the declarations of Gary Katz, Paul Hatch, Michael Gililland, and Ushiwata, who explained the problems he observed in connection with prior art saws and which he attempted to solve with his invention (*see* Ushiwata Decl. ¶¶ 10-16), as well as a computer-assisted drafting (CAD) presentation that Hatch created to "represent[] [his] closest interpretation of the device described by the Johnson patent" and what it teaches. (Hatch Decl. at 9; *see* Pl.'s. Ex. 19.)

[3] Finish carpentry deals with the trim that goes into a home after the drywall is complete, such as the crown molding where the walls meet the floor or ceiling. (Tr. at 25:3-8 (Katz).)

teachings of the relevant prior art references, and the fact that a person of ordinary skill in the art would have had no reason to combine those teachings. (*See generally* Tr. at 72-190, 342-52.) Defendant's witness Michael Gililland, an expert in the field of power tool design, offered testimony rebutting Hatch and Katz, expounding upon the teachings of the prior art and explaining that an ordinarily skilled person would have had sufficient reason to combine those teachings. (*See generally id.* at 220-339.)

Applying the legal standards set forth below to this evidence and to the record before the Board, and considering the arguments and pleadings of counsel, the Court makes the following findings of fact and conclusions of law:

## ANALYSIS

## I. LEGAL STANDARDS

### A. Judicial Review Under 35 U.S.C. § 145

"A patent applicant may challenge a decision of the Board by either appealing directly to the United States Court of Appeals for the Federal Circuit, by way of 35 U.S.C. § 141, or by filing a civil action to obtain a patent in the United States District Court for the District of Columbia, by way of 35 U.S.C. § 145." *Putman v. Dudas*, 539 F. Supp. 2d 414, 418 (D.D.C. 2008). Plaintiff chose the latter approach. Section 145 provides that this Court "may adjudge that [plaintiff] is entitled to receive a patent for [its] invention, as specified in any of [its] claims involved in the decision of the Board of Patent Appeals and Interferences, as the facts in the case may appear . . . ." 35 U.S.C. § 145. This provision gives the Court "the power to set aside any ruling refusing a patent," *Mazzari v. Rogan*, 323 F.3d 1000, 1004 (Fed. Cir. 2003), and determine patentability *de novo*. *See Newman v. Quigg*, 877 F.2d 1575, 1579 (Fed. Cir. 1989). "The 'thrust' of the action 'is that the decision of the board is erroneous on the facts, the law, or

both,'" and is "'in essence a suit *to set aside* the final decision of the board, like the bill in equity from which it was derived.'" *Putman*, 539 F. Supp. 2d at 418-19 (quoting *Fregeau v. Mossinghoff*, 776 F.2d 1034, 1037 (Fed. Cir. 1985) (emphasis in original)).

An action under § 145 is a hybrid of an appeal and a *trial de novo*. *Hitachi I*, 556 F. Supp. 2d at 46. It is not a conventional appeal of an agency action because although "the record before the [PTO] is the evidentiary nucleus," *Fregeau*, 776 F.2d at 1037, "the Court is not confined to the administrative record," *Putman*, 539 F. Supp. 2d at 419, and plaintiff may "present to the court evidence that the applicant did not present to the PTO." *Dickinson v. Zurko*, 527 U.S. 150, 164 (1999) (citation omitted); *see also Mazzari*, 323 F.3d at 1004. However, because plaintiff may not raise new issues that were not presented to the Examiner or the Board, *see Hyatt v. Dudas*, No. 03-CV-0901, 2005 WL 5569663, at *5 (D.D.C. Sept. 30, 2005) (citing *DeSeversky v. Brenner*, 424 F.2d 857, 858 (D.C. Cir. 1970)), the Court "may only evaluate 'new' evidence if it supplements issues raised previously before the PTO." *MacKay v. Quigg*, 641 F. Supp. 567, 569 (D.D.C. 1986) (citation omitted). The Court makes "*de novo* factual findings" where plaintiff presents new evidence that conflicts with particular findings of the Board, while applying the more deferential "substantial evidence" standard of review to the Board's unchallenged findings. *Hyatt*, 2005 WL 5569663, at *3 (quoting *Mazzari*, 323 F.3d at 1005).

Here, Hitachi's new evidence challenges the Board's obviousness determination. "Obviousness is a question of law with underpinning factual findings." *Mazzari*, 323 F.3d at 1005. Accordingly, "the Court need not defer" to the PTO's obviousness determination and "is instead free to make an independent determination as to the legal conclusions and inferences to be drawn from the facts." *Radix Corp. v. Samuels*, 13 U.S.P.Q.2d 1689, 1691 (D.D.C. 1989) (citing *Stevenson v. Int'l Trade Comm'n*, 612 F.2d 546, 549 (C.C.P.A. 1979)).

### B. "Obviousness" Under 35 U.S.C. § 103(a)

"[T]he federal patent power stems from a specific constitutional provision which authorizes the Congress 'To promote the Progress of . . . useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries.'" *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 5 (1966) (quoting U.S. Const., Art. I, § 8, cl. 8). This authority may not be used to "enlarge the patent monopoly without regard to the innovation, advancement or social benefit gained thereby," *id.* at 6, because "granting patent protection to advances that would occur in the ordinary course without real innovation retards progress." *KSR*, 550 U.S. at 419; *see also In re Kubin*, 561 F.3d 1351, 1361 (Fed. Cir. 2009). "Were it otherwise patents might stifle, rather than promote, the progress of useful arts." *KSR*, 550 U.S. at 427. In order to "weed[] out those inventions which would not be disclosed or devised but for the inducement of a patent," courts long ago developed a requirement that patentable subject matter must possess a degree of "invention" that exhibited "'more ingenuity and skill . . . than were possessed by an ordinary mechanic acquainted with the business . . . .'" *Graham*, 383 U.S. at 11 (quoting *Hotckiss v. Greenwood*, 52 U.S. (11 How.) 248, 267 (1851)).

In 1952, Congress codified this criterion in 35 U.S.C. § 103, which requires that patentable subject matter be "non-obvious." The statute now provides that "[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a). The non-obviousness requirement "creates a 'patent-free' zone around the state of the art, allowing skilled technicians to complete routine work such as the straightforward substitution of materials, the ordinary streamlining of parts and technical processes, and the usual

marginal improvements which occur as a technology matures." Roger E. Schechter & John R. Thomas, *Intellectual Property: The Law of Copyrights, Patents and Trademarks* § 17.1 (2003).

"Ultimately, the question to be determined by this Court is whether the claimed invention can be said to have been obvious to one of ordinary skill in the art." *Radix*, U.S.P.Q.2d at 1692 (citing *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983)). Where, as here, "the question is whether a patent claiming the combination of elements of prior art is obvious," courts must consider "whether the improvement is more than the predictable use of prior art elements according to their established functions." *KSR*, 550 U.S. at 417; *see also Monolithic Power Sys., Inc. v. O2 Micro Int'l Ltd.*, 558 F.3d 1341, 1352 (Fed. Cir. 2009). "[W]hen a patent 'simply arranges old elements with each performing the same function it had been known to perform' and yields no more than one would expect from such an arrangement, the combination is obvious." *KSR*, 550 U.S. at 417 (quoting *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282 (1976)).

To determine obviousness, the Court must examine (1) the level of ordinary skill in the pertinent art, (2) the scope and content of the prior art, (3) the differences between the prior art and the claims at issue, and (4) whether any "secondary considerations" such as "commercial success, long felt but unsolved needs, [or] failure of others" might provide objective evidence of non-obviousness by shedding light upon "the circumstances surrounding the origin of the subject matter sought to be patented." *KSR*, 550 U.S. at 406 (quoting *Graham*, 383 U.S. at 17-18). In addition, the Court must "determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue," by examining the "interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the

art . . . ." *Id.* at 418; *In re Gartside*, 203 F.3d 1305, 1316 (Fed. Cir. 2000) ("The presence or absence of a motivation to combine references . . . is a pure question of fact."). "The perspective from which these findings are made . . . is that of a person of ordinary skill in the field of invention," *Glaverbel Societe Anonyme v. Northlake Mktg. & Supply, Inc.*, 45 F.3d 1550, 1555 (Fed. Cir. 1995), who is presumed to have knowledge of all "pertinent prior art." *In re Carlson*, 983 F.2d 1032, 1038 (Fed. Cir. 1992). If the Court concludes that the claimed subject matter was obvious, the patent claim is invalid under § 103. *KSR*, 550 U.S. at 407.

## II. FINDINGS OF FACT

### A. The Level of Ordinary Skill in the Pertinent Art

At the time Hitachi's invention was made, a person of ordinary skill in the art would have been either a mechanical engineer (or equivalent) having at least 5 years of experience designing power tools, or someone having technical training and 10 years of experience designing power tools. The parties are in substantial agreement as to this definition. (*See* Ushiwata Decl. ¶ 9 (offering this definition); Jt. Ex. 17 (Decl. of Michael Gililland ["Gililland Decl."]) ¶ 10 (embracing Ushiwata's definition); *see also* Hatch Decl. at 5 ¶ 12 (proposing similar definition).)

### B. The Scope of the Prior Art

The scope of the prior art encompasses those references that are "analogous to the claimed invention." *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). "Common sense teaches . . . that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." *KSR*, 550 U.S. at 420. In fact, it would be error to "assume[e] that a person of ordinary skill attempting to solve a problem will be led only to those elements of prior art designed to solve the same problem." *Id.* Accordingly, one test for analogous art is "whether the art is from the same field of endeavor, regardless of the problem addressed . . . ." *Bigio*, 381

F.3d at 1325. Where a potential reference "is not within the field of the inventor's endeavor," it may still be analogous art if it is "reasonably pertinent to the particular problem with which the inventor is involved." *Id.*[4]

**1. The AAPA and Ito are prior art.**

By definition, the AAPA is the '294 patentee's own proffer of prior art. (*See also* Tr. at 119:12-25 (Hatch).) Hitachi's counsel also acknowledged that Ito is prior art. (*See id.* at 356:10-13.)

**2. Johnson and Ambrosio are prior art because they are from the same field of endeavor as Hitachi's device.**

The '294 patent describes the "[f]ield of the [i]nvention" as relating to "a desk-top cutting machine whose saw can be tilted rightward and leftward relative to the top of the base of the machine." (Jt. Ex. 1 at 8 (col.1 ll. 6-9).) However, the patentee's narrow view of the relevant field does not necessarily define the prior art's scope. The field of endeavor can be correctly determined "by consulting the structure and function of the claimed invention as perceived by one of ordinary skill in the art" with "reference to explanations of the invention's subject matter in the patent application . . . ." *Bigio*, 381 F.3d at 1325-26.

The '294 patent's description of the prior art and its proposed solutions to those problems shed light on the relevant aspects of the design's structure and function. The patent explains that the prior art includes the AAPA, which enables 45° bevel-cutting in one direction and whose motor and saw shafts are "disposed in parallel" and connected through "toothed engagement,"

[4] JPN '901 is cited by the '294 patent and by Ito as a foreign patent "reference" and discussed during their review of the prior art. (Jt. Ex. 1 at 1, 8 (col.1 ll.35-36); Jt. Ex. 7 at 1, 12 (col.1 ll.18-19).) At trial, plaintiff's counsel agreed that JPN '901 constitutes prior art. (*See* Tr. at 108:5-9; *see also id.* at 356:2-9.) However, neither the Examiner nor the Board considered JPN '901 as prior art for purposes of rejecting Hitachi's patent as obvious. (*See* Board's Decision at 24; Jt. Ex. 16 (Examiner's Answer) at 11.) Therefore, the Court will not rely on JPN '901 as prior art for purposes of evaluating the non-obviousness of Claim 1.

and JPN '901, which possesses a "tiltable circular saw assembly" that permits ±45° bevel cuts but uses a perpendicular motor and saw shaft design and therefore suffers from various inefficiencies. (*See* Jt. Ex. 1 at 8 (col.1 ll.10-49).) The '294 patent then addresses the perceived inadequacies of both the AAPA and JPN '901 by proposing a saw assembly whose motor shaft is similarly "disposed in parallel with" the saw shaft but also displaced from the motor shaft by at least one blade radius, in order to permit bevel cuts in both directions with a less costly and more accurate design. (*See id.* at 8 (col.2 ll.5-13), 9 (col.3 ll.65-67).)

In light of the Hitachi device's structure and function, the Court finds that "[c]ommon sense" would have guided the ordinarily skilled person to consider other tiltable motorized devices used to cut construction materials and to "fit [their] teachings . . . together like pieces of a puzzle." *KSR*, 550 U.S. at 420. Johnson's "multiple angle cutting apparatus" and Ambrosio's "tilting table saw" employ structures that are similar to Hitachi's device in order to serve similar functions: each possesses a motorized saw assembly with parallel motor and saw shafts displaced by at least one blade radius, the saw assembly is fixed to a structure that also supports a workpiece, and the saw can be tilted relative to the workpiece in order to make bevel cuts. A person of ordinary skill in the art would view Johnson, Ambrosio, and Hitachi's device as belonging to the same field of endeavor, thus making Johnson and Ambrosio prior art.[5] *See Bigio*, 381 F.3d at 1326 (affirming Board's finding that prior art toothbrush was in same field of endeavor as patentee's hairbrush where Board concluded that "the structural similarities between toothbrushes and small brushes for hair would have led one of ordinary skill in the art working in

[5] In the alternative, even if Johnson and Ambrosio are not from the same field of endeavor as Hitachi's device, the Court finds that they are still analogous art because, for the reasons Gililland offered (*see* Tr. at 266:16-270:24, 287:20-288:10), they are "reasonably pertinent" to the problem addressed by Hitachi's device. *Bigio*, 381 F.3d at 1325. *See infra* Section II(B)(3).

the specific field of hairbrushes to consider all similar brushes including toothbrushes").

### 3. Langworthy is prior art because it is reasonably pertinent to the particular problems addressed by Hitachi's device.

"A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem." *In re ICON Health and Fitness, Inc.*, 496 F.3d 1374, 1379-80 (Fed. Cir. 2007) (quoting *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992)); *see, e.g.*, *In re Paulsen*, 30 F.3d 1475, 1481-82 (Fed. Cir. 1994) (finding that hinges, latches, and springs for piano lids, furniture cabinets, and audio cassette holders were relevant prior art for patentee's hinge and latch mechanism for connecting laptop computer's screen to rest of computer). Where an inventor is considering how to design a particular mechanism to fit a specific type of device, he "would naturally look to references employing" other forms of that mechanism, even where they are found in different types of devices. *ICON Health and Fitness*, 496 F.3d at 1380 (discussing *Paulsen*, 30 F.3d 1475).

The Court finds that "given the nature of the problems confronted by the inventor[] [of Hitachi's device], one of ordinarily skill in the art would have consulted the mechanical arts for" motorized circular saw assemblies more generally. *Paulsen*, 30 F.3d at 1482; *see ICON Health and Fitness*, 496 F.3d at 1380 ("Analogous art to Icon's application [for a treadmill], when considering the [folding mechanism at issue and means of maintaining a folded position], may come from any area describing hinges, springs, latches, counterweights, or other similar mechanisms – such as the folding bed in [an earlier reference]."). Ushiwata sought to configure the '294 patent's saw assembly in view of the limitations of the AAPA's saw assembly, which does not permit unobstructed 45° bevel cuts in both directions, and JPN '901's multistage beveled-gear transmission, which he deemed to be too complicated and costly. (*See* Jt. Ex. 1 at

8.) The Hitachi design thus generally addresses the problem of how to displace the motor shaft from the saw shaft so that the user can make a variety of unobstructed angled cuts, while simplifying the transmission to minimize cost and maximize accuracy. "Nothing about [Hitachi's saw assembly] requires any particular focus on" desktop cutting machines, *ICON Health and Fitness*, 496 F.3d at 1380, because "[t]he problems encountered by the inventors of the ['294] patent were problems that were not unique to" desktop cutting machines or "the particular environment" in which they are presented. *Paulsen*, 30 F.3d at 1481.

Langworthy evinces a similar concern for displacing the motor shaft from the saw shaft in order to maximize the "accuracy and precision" of potential styles and angles of cuts. (*See* Jt. Ex. 9 at 2 (col.1 ll.9-30).) Langworthy's "primary object" is to be "comparatively simple in construction and operation and composed of a minimum number of parts . . . ." (*Id.*; *see also* Tr. at 329:25-330:4 (Gililland).) Langworthy's saw assembly consists of a sterilizable blade and saw shaft fixed to one end of a flat tubular arm that encases the transmission means; the other end of the arm is attached to (and can detach from) the motor, which is unsterilized but can be covered in a sterilized bag. (Jt. Ex. 9 at 2-3 (col.2 l.70 - col.3 l.20.) Because the arm displaces the motor shaft from the saw shaft, the user can hold the arm and wield the device to "attain cuts at various angles . . . with facility and accuracy in the operations." (*Id.* at 3 (col.4 ll.69-74).) Langworthy thus falls within "[t]he scope of the prior art" because its parallel but displaced shafts and simplified transmission system are "'reasonably pertinent to the particular problem with which [Hitachi's] invention was involved.'" *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 664 (Fed. Cir. 2000) (quoting *Stratoflex*, 713 F.2d at 1535).[6]

[6] Hatch conceded that surgical devices were not *per se* irrelevant to the problems considered by Ushiwata, but he rejected the relevance of Langworthy in particular. (*See* Tr. 142:14-20 (Q: "As one with ordinary skill in the art, would a patent describing a device such as this, have relevance to you in designing a miter saw?" A: "This one doesn't. I won't rule out

### C. The Content of the Prior Art

"The prior art is relevant for all it contains, including what it fairly suggests to one of ordinary skill in the art." *Markman*, 987 F. Supp. at 32. The teachings of earlier patents are therefore not limited to the "teaching[s] of the specific embodiment recited," *In re Fracalossi*, 681 F.2d 792, 794 n.1 (C.C.P.A. 1982), because even patents for "obsolete technology" can be considered for what they "disclose[] in relation to the claimed invention." *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991)). The Court finds that the AAPA or Ito, in conjunction with any one of Johnson, Ambrosio, or Langworthy, teach every element of Claim 1 of the '294 patent.

#### 1. The AAPA

As described in the '294 patent, the AAPA is a "conventional desk-top cutting machine" with a circular saw assembly whose shaft is connected "through toothed engagement" to and "disposed in parallel with" the motor shaft, such that the motor projects out from the center of the blade. (*See* Jt. Ex. 1 at 5 (figs.6 & 7), 8 (col.1 ll.11-33).) The saw assembly is mounted on a holder, which is in turn attached to a base that supports the workpiece to be cut. (*See id.*) The AAPA teaches that while the holder can be tilted leftward in order to make "left-hand" bevel cuts at a 45° angle, the structure of the saw assembly only permits a rightward 20° or 30° tilt, at which point the motor housing would hit the base. (*See id.*; *see also* Pl.'s Dec. 22, 2008

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surgical operators as such because of that reason, but there is very little that I can, as one skilled in the art at the time, really draw from this."). The Court must reject Hatch's conclusion that Langworthy is not prior art to the extent it was premised upon the relatively small scale of Langworthy's design and function. (*See id.* at 142:4-12 (noting that Langworthy "talks about incisions" and is "dealing with an entirely different type of cut, user, or procedure. . . . [I]t's described as a device that's held like a pen. So, that would lead me to think it is a very small item for doing small cuts, and not chopping things off, of course.") As a matter of law, a disparity in size or scale of function is not automatically disqualifying when considering the prior art's scope. *See, e.g.*, *Paulsen*, 30 F.3d at 1482 (hinges on audio cassette holders and piano lids were pertinent to problem of how to hinge laptop computer screens); *see also Bigio*, 381 F.3d at 1326 (toothbrush was prior art for hairbrush).

Statement of Material Facts ["Pl.'s Pretrial Facts"] [Dkt. No. 35] ¶ 10 ("The AAPA saw is not capable of making ±45° bevel cuts[;] instead the AAPA, when ti[lt]ed in the clockwise direction, can only move 20 or 30 degrees.").) In order to obtain 45° cuts in opposite directions, the workpiece must be rotated. (Jt. Ex. 1 at 8.)

The Court finds that the Hitachi patent's own description and depictions of the AAPA in Figures 6 and 7 demonstrate that the patentee viewed the AAPA as teaching Element 1 (a base supporting a workpiece), Element 2 (a turntable within the base),[7] Element 3 (a holder supported by the turntable for tilting in opposite directions),[8] Element 4 (a circular saw blade), Element 5 (a saw shaft that can be pivoted downward into the workpiece), and Element 6 (a saw assembly with a covered motor). (*See* Jt. Ex. 1 at 5 (figs.6 & 7) (labeling parts with same numbers as those used to label Hitachi device in Figures 1 and 2); *see also* Tr. at 237:4-240:8 (Gililland).) The Court also credits Gililland's testimony that the '294 patent's description and illustrations of the

[7] Plaintiff's pretrial statement of facts erroneously asserted that Gililland testified at his deposition that the AAPA "does not disclose" Element 2's turntable in the base. (Pl.'s Pretrial Facts ¶ 8 (citing Oct. 31, 2008 Gililland Dep. ["Gililland Dep."] at 134:17-21, attached as Ex. 1 to Pl.'s Pretrial Facts).) The section cited by plaintiff does not state this, and Gililland in fact testified that the AAPA does indeed have a turntable in the base. (Gililland Dep. at 137:11-16; *accord* Tr. at 258:10-12 ("All miter saws have a base. All miter saws have a rotatable table. That's what makes them a miter saw.").)

[8] Notwithstanding Gililland's testimony that the AAPA only teaches 45° bevel cuts in one direction (*see* Tr. at 236:5-6, 251:21-23, 313:10-12), the Court notes that the '294 patent expressly acknowledges (as did plaintiff) that the AAPA teaches the ability to tilt in both directions: leftward for a 45° bevel cut, but rightward for only a 20° or 30° bevel cut, after which point the AAPA's motor housing hits the base. (*See* Jt. Ex. 1 at 8 (col.1 ll.19-27); *see also* Pl.'s Pretrial Facts ¶ 10.) The Court must credit the patentee's own understanding of what the AAPA teaches, as the AAPA is not a real-world saw but rather a theoretical construct of whatever prior art teachings the patentee acknowledged. (*See* Tr. at 254:3-5 (Hitachi's counsel: "[The] AAPA is . . . [F]igure 6 and 7 and lines of text. It totals 225 words. It's not that saw [*i.e.*, plaintiff's Demonstrative Exhibit 15, a previously commercially available single-bevel saw]."); *see also id.* at 236:18-20 (Gililland: "[Figure 7 of the '294 patent] is a construct that doesn't actually exist.")

AAPA disclose Element 7, a motor shaft parallel to and above the saw shaft.[9] (Tr. at 240:10-241:4.) Not only does the '294 patent state that the shafts are parallel, but it also depicts the motor shaft as placed above the saw shaft. (*See* Jt. Ex. 1 at 5 (figs.6 & 7, items 9 & 12); *see also* Tr. at 164-65 (Hatch's affirmation that Figure 7 depicts AAPA's motor and saw shafts as described in prior art discussion).) Therefore, the Court finds that the AAPA teaches Element 7.

**2. Ito**

Ito discloses a desktop miter saw that can tilt 45° in opposite directions to make bevel cuts. (*See* Jt. Ex. 7 at 14-15 (Claims).) Like the AAPA, Ito claims a saw assembly attached to a tiltable holder, which is in turn attached to a base that supports the workpiece. (*See* Jt. Ex. 7 at 5 (fig.4), 11-12.) That base contains a turntable so the user can rotate the workpiece for miter cuts. (*See id.* at 11.) Ito's motor is turned upward at a 45° angle relative to the saw blade and transmits power to the saw shaft through beveled gears, permitting unobstructed 45° bevel cuts in both directions. (*Id.* at 14-15.) Ito thus teaches that it is possible to achieve 45° bevel cuts in both directions by moving the motor shaft upward from the base so that it will not abut the workpiece or base when the saw is tilted.

In addition, Ito teaches that when moving the motor shaft upward, it is not desirable to place the motor shaft perpendicular to the saw shaft in the manner of JPN '901. Ito cites JPN '901 as prior art and discusses how JPN '901 permits unobstructed dual-beveling by raising the motor shaft "laterally and upwardly" out of the way of the saw blade, so that the motor shaft is perpendicular to the saw shaft (and thus parallel to the saw blade). (Jt. Ex. 7 at 11 (col.1 ll.17-

[9] As Gililland explained, Element 7 only defines the motor shaft in Hitachi's device as parallel to and above the saw shaft, and does not define any specific displacement between them. (Tr. at 247:22-248:17.) Rather, Element 8 specifies the required displacement as at least one blade radius. (*Id.* at 242:23-243:3.) In other words, "Element 7 says 'above'; [E]lement 8 sa[ys] 'how much above.'" (*Id.* at 251:3-4.) Hitachi provided nothing that undercut Gililland's conclusion that the AAPA teaches Element 7.

31).) Ito concludes that JPN '901's design is non-optimal because it employs a "multistage" gear train to transmit power to the saw shaft, which increases the complexity, cost, and size of the saw. (*Id.*)

The Court credits Gililland's testimony that Ito teaches Elements 1, 2, 3, 4, 5, and 6 of Claim 1 of the '294 patent, as well as those portions of Element 8 that describe both a means of transmission between the motor and saw shafts and the ability to tilt 45° in either direction without obstruction. (*See* Tr. at 258:8-262:5; *see also* Pl.'s Pretrial Facts ¶ 11 ("The saw disclosed in Ito is already capable of making ±45° bevel cuts.").)

**3. Johnson**

Johnson discloses a multiple-angle cutting machine that computerizes the process of cutting and shaping the ends of "extrusions," such as tubing, that are automatically fed into cutting position by means of a "stock feed and orienting mechanism" on the machine's left side and a workpiece "handling mechanism" on its right. (*See* Jt. Ex. 8 at 2 (fig.1, items 13 & 15), 15 (col.1 ll.5-11), 18 (col.7 l.50 - col.8 l.56).) Cutting angles and other instructions are programmed in advance; once the operator "initiates automatic cutting by pushing the start button," all that remains to be done is to "observe[] the apparatus for proper operation, off load[] parts[,] and load[] additional extrusions or stock as needed." (*Id.* at 18 (col.8 ll.6-14).)

The shaft of Johnson's circular saw is connected by drive train to a motor shaft placed in parallel with and above the saw shaft. (*See* Jt. Ex. 8 at 2 (fig.1), 17 (col.5 ll.52-55); *see also* Tr. at 266:22-25 (Gililland); Hatch Decl. at 8-10 (recreating Johnson's saw assembly structure in CAD diagram); Pl.'s Ex. 19 (CAD presentation).) The saw assembly rests at the end of a horizontal hydraulic arm which is itself mounted atop a vertical hydraulic arm; unlike Hitachi's saw, which pivots downward when cutting, Johnson's saw moves into cutting position through the contraction or expansion of the hydraulic arms. (*See* Jt. Ex. 8 at 17 (col.5 ll.49-59).) These

hydraulic arms are part of a "cutting member positioning mechanism" that can rotate and tilt the saw in arcs centered on a single "point of cut." (*Id.* (col.5 ll.60-68).) The "angular orientation of the cutting member" is "selectably controllable" by a motor that can, among other things, "rotate [the] cutting member" around "a horizontal center line which passes through the point of cut." (*Id.*) This would move the saw along a semicircular track that defines the "vertical-tiltable travel path," corresponding to the tilting capability necessary for bevel cuts. (*Id.* at 15 (col.2 ll.5-6); *see also* Gililland Decl. ¶ 24.) Although the workpiece handling mechanism can also rotate the workpiece to achieve finer adjustments to the miter-cutting capability (*see* Jt. Ex. 8 at 18 (col.7 ll.4-12)), the saw assembly's positioning mechanism is the only structure capable of tilting for bevel cuts. (*See id.* at 3 (figs.2 & 3 (showing angle B)); Hatch Decl. at 10 ¶ 1 ("[O]nly axis [*i.e.*, angle] B refers directly to beveling.").)

Hitachi did not appear to dispute that Johnson teaches the ability to *tilt* the saw assembly 45° in either direction. The text speaks generally about the "±45° capability of the cutting member positioning mechanism" (Jt. Ex. 8 at 17 (col.5 ll.14-15); *see also id.* at 18 (col.7 ll.11-12)), and it repeatedly describes the ability to tilt the saw without any reference to limits upon that ability. (*See id.* at 1 (Abstract), 15 (col.2 ll.5-6), 16 (col.4 ll.56-64), 17 (col.5 ll.61-65), 19 (Claims).) Hatch conceded that "there is plenty of room" for Johnson's saw assembly to tilt in either direction. (*See* Tr. at 186:18-187:1; *see also* Hatch Decl. at 10 ¶ 2.)

However, the parties disputed whether Johnson teaches the ability to *cut* while tilted 45° in either direction. The Court finds that Johnson so teaches. The Court credits Gililland's testimony that despite the text's reference to the ±45° positioning capability during a broader discussion of miter rotation, the patent makes no distinction in how it describes and depicts the mitering and beveling angles of rotation and their related structures. (*See* Tr. at 272:7-10

("[Johnson] uses the same language to describe the rotation about the axes [*i.e.*, angles] B [bevel] and C [miter]. And he demonstrates in his drawings the same kinds of structure. So, I don't read any limitation on the bevel angle that's not there for the miter angle."); *id.* at 317:24-318:12.) For example, Figure 1 depicts the semicircular track that defines the "vertical-tiltable travel path" for bevel cutting as Item 49, and that structure extends in both directions from the saw's zero-tilt position. (*See* Jt. Ex. 8 at 2 (fig.1), 17 (col.5 ll.61-65); *see also* Tr. at 270:2-24 (Gililland).)

Plaintiff relies upon Hatch's testimony and his CAD presentation to show that even though Johnson's saw can tilt to make "left-hand" 45° bevel cuts, it cannot make cuts when tilted 45° in the other direction. (*See* Hatch Decl. at 10 ¶ 2.) The Court is not persuaded. First, Hatch contends that the saw's "gear and belt housing" – *i.e.*, the housing for what the patent calls the "drive train" – "is far too large on the right hand side" to permit "right-hand" 45° bevel cuts, and that it would hit the workpiece or its handling mechanism when attempting to cut from a 45° rightward tilt. (*Id.*; *see also* Tr. at 186:11-187:8.) However, this conclusion about the relative sizes of the drive train's housing, the saw blade, and the workpiece handling mechanism lacks a reliable basis in the patent. The specification discusses Johnson's drive train only once in passing (*see* Jt. Ex. 8 at 17 (col.5 l.53)), and Hatch's conclusion about the scale of the elements was "solely based on [Figure 1's] image alone." (Tr. at 182:15.) Yet it is improper – and potentially "misleading" (*id.* at 137:19-20 (Hatch)) – to infer scale solely from the patent's illustrations, because "patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if," as here, "the specification is completely silent on the issue." *Hockerson-Halberstadt, Inc. v. Avia Group Int'l., Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000).[10] The Court thus cannot credit Hitachi's argument because it impermissibly "hinges

[10] Hatch in fact acknowledged that Figure 1 "is not entirely accurate to scale," and that he had to adjust the position of certain components of Figure 1 when creating his CAD presentation

on an inference drawn from certain figures about the quantitative relationship" among the sizes of the saw assembly's components and the workpiece handling mechanism. *Id.*

Second, Hitachi contends that Johnson's *ability* to rotate a workpiece 180° by means of the handling mechanism is evidence of Johnson's *need* to rotate the workpiece because it cannot tilt the saw 45° in both directions. (*See* Tr. at 380:3-4 (Hitachi's counsel: "Whatever Johnson was trying to do with his device, he also had a flipping problem.").) However, plaintiff assumes without basis that the handling mechanism's rotational function is "an automated helicoptering system" (*see id.* at 380:4-13), referring to the "helicoptering" or "whirly-birding" workaround developed by users of single-bevel desktop saws to make bevel cuts in opposite directions. (*See id.* at 39:9-15 (Katz).) Just because users of a single-bevel desktop miter saw must rotate the workpiece, it does not necessarily follow that Johnson must be a single-bevel device simply because it enables workpiece rotation. (*See* Jt. Ex. 8 at 2 (fig.1, item 15), 18 (col.8 ll.40-42).) Rather, the handling mechanism's function should be understood in light of Johnson's intended purpose: to automate and consolidate the process of feeding and cutting the *ends* of workpieces (*id.* at 15 (col.1 ll.5-11), which was previously handled by different machines at different times. (*Id.* (col.1 ll.14-41).) Because Johnson's saw is designed to rotate and tilt around a single point of cut, it is necessary to move both ends of each workpiece to that point in order to cut them. First, the handling mechanism receives each new piece of stock as it is fed into the machine, clamps the workpiece while it is cut to the desired length, and continues to secure it while the newly created free end is shaped by the saw assembly at a pre-programmed angle. (*See id.* at 18

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so that they would reflect the specifications in Johnson's text and other illustrations. (*Id.* at 183:20-24; Hatch Decl. at 8-9.) Gililland also testified that "[i]f you were to move [the saw assembly] on that CAD drawing to a right 45[° miter position], you would also have an interference. Yet, [Johnson] clearly says in the patent that it can do a [±]45[° miter cut]." (Tr. at 271:7-19.)

(col.8 ll.15-56).) Next, the handling mechanism rotates the unshaped end into place at the point of cut and makes other angular adjustments as desired. (*Id.*) Once that other end has been cut, the finished workpiece is rotated back into its starting orientation, so that it can be pushed out by a new piece of stock that feeds automatically into the machine. (*Id.*) Nothing in the patent suggests that these automated functions and the need to move each end of the workpiece to the point of cut are mutually exclusive of the saw's ability to tilt and cut 45° in either direction at that point of cut.

However, even if plaintiff were correct that the size of Johnson's saw assembly elements relative to the handling mechanism would not permit right-hand 45° bevel cuts, Johnson's teachings are not limited to "the specific embodiment recited." *Fracalossi*, 681 F.2d at 794 n.1. Because "[a] person of ordinary skill is also a person of ordinary creativity, not an automaton," *KSR*, 550 U.S. at 421, he or she would have understood, for example, that the drive train could be made smaller relative to the handling mechanism. (*See also* Gililland Decl. ¶ 26.) Further, Gililland testified that the handling mechanism "doesn't exist on a miter saw or on the desktop cutting machine of Ushiwata," and is irrelevant "to the problem that is presenting itself to Ushiwata." (Tr. at 278:2-4.) The ordinarily skilled person would have therefore recognized that the handling mechanism, which facilitates Johnson's *automated* feeding and cutting, would be irrelevant when designing a *manually operated* dual-bevel desktop miter saw, such that there would be no need to incorporate the potentially obstructive handling mechanism. Accordingly, Johnson's teaching of how to tilt 45° in either direction would have remained applicable to the design of a dual-bevel desktop saw.

Turning to the specific elements of Claim 1 of the '294 patent, the Court finds that Johnson describes Element 1 insofar as it possesses a mechanism that supports the workpiece in

the manner of a "base." The Court also credits Gililland's testimony that Johnson teaches those portions of Element 3 that describe a structure that can tilt the saw assembly "transversely in opposite directions about a zero-tilt angle position" (*see* Tr. at 276:2-7), as well as Element 4, a circular saw blade, Element 6, a saw assembly with a covered motor, and Element 7, a motor shaft parallel to and above the saw shaft. (*Id.* at 276:2-3; *see* Jt. Ex. 8 at 2 (fig.1, items 41 & 43), 17 (col.5 ll.53-55).) Finally, the Court credits Gililland's testimony that Johnson teaches those portions of Element 8 which describe the displacement of the motor and saw shafts by at least one blade radius and their connection by transmission means, and which describe the saw assembly's placement on a structure that permits tilting 45° in either direction without obstruction. (*See* Tr. at 266:22-267:2, 270:17-24, 275:10-20.)

**4. Ambrosio**

Ambrosio discloses a tilting table saw with a "new and improved means for varying the angular position of the saw blade relative to the work supportable table." (Jt. Ex. 10 at 4 (col.1 ll.8-11). The motorized circular saw assembly is mounted underneath the table, with the blade fitting through a slot running through the center of the table's length. (*See id.* at 1 (fig.1), 4 (col.1 ll.62-72).) A pulley transmission connects the saw shaft to a motor shaft that is placed parallel to and below the saw shaft. (*See id.* at 1, 4 (col.2 ll.31-39).) The saw can be tilted to either side of its zero-tilt position, although the text does not specify the precise angle. (*See id.* at 2 (fig.3, item 76), 5 (col.3 ll.53-55 (describing ability to move tilting knob "in either direction" as shown in illustration); Tr. at 330:24-25 (Gililland: "Ambrosio teaches us a way to make bevel cuts in both directions, but it does not give us an angle.").)[11]

[11] Hitachi does not appear to dispute that Ambrosio can tilt in either direction. (*See* Pl.'s Feb. 13, 2008 Statement of Material Facts Not in Dispute in Supp. of Mot. for Summ J. [Dkt. No. 12-6] ¶ 40; *cf. id.* at 144:1-5 (Hatch's testimony that Ambrosio does not teach how to make ±45° cuts but does disclose ability to make some cuts).)

With respect to Claim 1 of the '294 patent, the Court finds that Ambrosio teaches Element 1 because it claims a "base, [and] a horizontal work-supporting table fixed to said base" (Jt. Ex. 10 at 5 (col.4 ll.22-23)), and those portions of Element 3 which describe a means for tilting the saw "transversely in opposite directions." (*See* Tr. at 288-89, 330:24-25 (Gililland).) Ambrosio also teaches Elements 4 and 6, because it possesses a circular saw assembly with a motor housing, and Element 7, to the extent that the motor and saw shafts are parallel and the saw shaft is interposed between the motor shaft and the cutting surface. (*See* Jt. Ex. 10 at 4 (col.2 ll.31-39); Tr. at 291:2-10 (Gililland); *cf. id.* at 144:13-14 (Hatch's testimony that Ambrosio "has a few of these elements, but not all"). Although Element 7 specifies that the motor shaft is *above* the saw shaft, Gililland persuasively explained that the term "above" should be understood in the context of a desktop saw, where the saw assembly is mounted *over* the cutting surface, such that a motor shaft "above" and parallel to the saw shaft simply means that the saw shaft is interposed between the motor shaft and the cutting surface. (Tr. at 291:11-17.) Where, as with Ambrosio's table saw, the saw assembly is mounted *below* the cutting surface but its saw shaft is similarly interposed between the motor shaft and cutting surface, the Court finds that a person of ordinary skill would know to simply "flip everything upside down" for use in a desktop device. (*Id.*) Finally, the Court credits Gililland's testimony that Ambrosio teaches those portions of Element 8 that describe how the motor and saw shafts are displaced by at least one blade radius and connected by transmission means, permitting the user to make unobstructed bevel cuts in either direction.[12] (*Id.* at 290:1-8; 294:14.)

[12] Although Ambrosio's illustrations do not label every component identified in the text as relevant to the tilting of the blade, Gililland testified that the illustrations' omissions are not relevant to his conclusion that Ambrosio can bevel in both directions. (*See* Tr. at 333:12-334:21.) Even if the omissions were relevant, the Court finds that the text is sufficiently specific for one familiar with geometry (let alone one ordinarily skilled in the art) to discern the components' locations. (*See* Jt. Ex. 10 at 5 (col.3 ll.24-49).)

#### 5. Langworthy

As discussed, *see supra* Section II(B)(3), Langworthy discloses a motorized surgical saw that can be used to make a variety of cuts at various angles. (*See generally* Jt. Ex. 9 at 2-3.) It also teaches that the placement of the motor and saw shafts in parallel with each other, and their connection through transmission means, requires "a minimum number of parts" and permits "comparatively simple [] construction and operation . . . ." (*Id.* at 2 (col.1 ll.15-20).) With respect to Claim 1 of the Hitachi patent, Langworthy teaches Elements 4 and 6, a motorized circular saw assembly with a motor housing. The Court also finds that it teaches those portions of Element 7 and 8 that describe parallel motor and saw shafts, displaced by at least one blade radius and connected by transmission means, which permit the user to make unobstructed cuts at various angles relative to the workpiece – *i.e.*, the patient's body. (*See id.* at 1 (figs.1-3), 2 (col.1 ll.49-52, col.2 ll.83-94); Tr. at 285:17-286:4 (Gililland).)

### D. Differences Between the Prior Art and the Claims at Issue

The prior art collectively teaches every element of Claim 1 of the '294 patent. Although no reference alone teaches the ability to make dual-bevel cuts with a parallel-shaft saw assembly mounted on a downward pivot, it is not necessary for any single reference to anticipate every element of Claim 1, because "the need to determine obviousness presumes anticipation is lacking." *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983).

#### 1. The AAPA

As both parties agree, the AAPA does not teach Element 8 of Claim 1 of the Hitachi patent. (*See* Tr. at 122:9-123:1 (Hatch); *id.* at 251:21-22 (Gililland).)

#### 2. Ito

Because the axes of Ito's motor and saw shafts intersect at an acute angle, Ito does not teach Element 7's parallel shaft structure, nor does it teach those portions of Element 8 regarding

the shafts' displacement.

**3. Johnson**

Johnson does not teach Element 2, a turntable rotatably disposed in the machine's work-supporting base, nor does it teach the portion of Element 3 referring to the fact that the turntable supports the structure that permits tilting. (*See* Tr. at 136:8-21 (Hatch).) In addition, because Johnson's saw assembly is mounted on hydraulic arms that are part of the positioning mechanism, Johnson does not teach Element 5, which describes a holder that supports the saw assembly and contains a pivot shaft about which the saw can swing downwards into the workpiece. And because the Court has seen nothing to suggest that Johnson's saw could tilt *more than* 45° in any direction, the Court finds that Johnson does not teach those portions of Element 8 that discuss the ability to tilt at an angle "greater than" 45 degrees.

**4. Ambrosio**

Like Johnson, Ambrosio does not teach Element 2, the portion of Element 3 referring to the turntable's support of the tilting structure, or the portion of Element 5 describing a pivot shaft for the saw assembly. (*See also* Tr. at 331:7-332:1 (Gililland).) And, as discussed, Ambrosio does not actually teach all of Element 7 because the motor shaft is below the saw shaft, although this is not a material difference. *See supra* Section II(C)(4). Finally, Ambrosio does not teach a specific bevel-cutting angle, and therefore does not teach Element 8's reference to "an angle greater than or equal to 45 degrees." (*See* Tr. at 144:1-2 (Hatch); *id.* at 330:21-25 (Gililland).)

**5. Langworthy**

Langworthy is a handheld device, so it does not teach Element 1, a base supporting the workpiece. Like Johnson and Ambrosio, it does not teach Elements 2, 3, or 5, because it lacks a turntable, a holder that permits tilting, and a pivot shaft. And because the device's orientation is not fixed in space nor is the saw shaft's location fixed relative to a cutting surface, Langworthy

does not teach those portions of Element 7 that refer to a motor shaft "above" the saw shaft, or those portions of Element 8 that refer to the ability to tilt 45° relative to a "zero-tilt angle position." (*See generally* Tr. at 139:23-142:4 (Hatch).)

**E. A Reason to Combine the Elements**

"[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *KSR*, 550 U.S. at 420. In particular, "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." *Id.* The Court "need not seek out precise teachings directed to the specific subject matter of the challenged claim," *id.* at 418, because its analysis can instead "take account of 'the inferences and creative steps,' or even routine steps, that an inventor would employ . . . ." *Ball Aerosol and Specialty Container, Inc. v. Ltd. Brands, Inc.*, 555 F.3d 984, 993 (Fed. Cir. 2009) (quoting *KSR*, 550 U.S. at 418). Ultimately, whether a particular combination of references is "obvious to try" will depend upon "the characteristics of the science or technology, its state of advance, the nature of the known choices, the specificity or generality of the prior art, and the predictability of results in the area of interest." *Abbott Labs. v. Sandoz, Inc.*, 544 F.3d 1341, 1352 (Fed. Cir. 2008). The mechanical arts are among the "predictable arts," *Liebel-Flarsheim Co. v. Medrad, Inc.*, 481 F.3d 1371, 1379 (Fed. Cir. 2007), and "[i]n the predictable arts, a trial record may more readily show a motivation to combine known elements to yield a predictable result, thus rendering a claimed invention obvious." *Rothman v. Target Corp.*, 556 F.3d 1310, 1319 (Fed. Cir. 2009).

Applying these guiding principles, the Court finds that at the time this saw was invented, there was a recognized design need given the limitations of both the AAPA and Ito, there were a finite number of predictable solutions, the saw assembly designs of Johnson, Ambrosio, and

Langworthy were known options within the ordinarily skilled person's technical grasp, and there was therefore a good reason to combine those references' saw assembly designs with the AAPA or Ito.

**1. Combining the AAPA with Johnson, Ambrosio, or Langworthy**

The '294 patent describes a desire to improve upon the AAPA's "very low" efficiency by redesigning the saw assembly to move the motor so it would not hit the base when tilting the saw 45° in either direction. (Jt. Ex. 1 at 8 (col.1 ll.19-33).) Ito voiced similar concerns about the conventional single-bevel design. (*See* Jt. Ex. 7 at 11 (col.11-17).) Ushiwata also testified that "as of 1992, there had been an industry desire for a desktop miter saw able to pivot 45° in either direction to make bevel cuts." (Ushiwata Decl. ¶ 10.) Given Ushiwata and Ito's independent recognition that the state of the art was inadequate, the Court finds that at the time the Hitachi device was made, the ordinarily skilled person would also have perceived "a design need or market pressure" that would have furnished sufficient reason to consider altering the AAPA's saw assembly. *KSR*, 550 U.S. at 420.

The AAPA's saw assembly's defining features are (i) its parallel motor and saw shafts and (ii) the motor shaft's direct connection with and transmission of power to the saw shaft through toothed engagement. The hypothetical inventor could have tried to re-orient the motor shaft so it was no longer parallel to the saw shaft, while keeping the shafts in direct contact through toothed engagement. Re-orienting the motor shaft to an acute angle relative to the saw shaft would have led to a design like Ito's, and re-orienting it so it was perpendicular to the saw shaft would have led to a "single-stage" version of the JPN '901 design (if one were possible). The record shows that both such orientations in Ito and JPN '901 require beveled gears.[13]

[13] "Whether or not [JPN '901] is a prior art reference, it is evidence that can be used to demonstrate a motivation to combine implicit in the knowledge of one of skill in the art of

Because Ushiwata criticized the use of JPN '901's beveled gears as an "expensive means for motive power transmission" (Jt. Ex. 1 at 8 (col.1 ll.44-46)), and both Katz and Gililland testified that beveled gear designs are susceptible to vibrations and related phenomena that can affect the quality of the cut (Katz Decl. ¶ 19; Tr. at 265:11-16 (Gililland)), the ordinarily skilled person would have shared these opinions and viewed the use of beveled gears as problematic. This hypothetical inventor would therefore have also considered keeping the saw assembly's motor and saw shafts parallel while eliminating their direct contact through toothed engagement, in favor of some other means of transmission. Because Langworthy's parallel but displaced shaft structure was old and "well-known" in the art (Tr. at 284:17-24 (Gililland)), as shown by Johnson and Ambrosio's use of similar designs, the hypothetical inventor would have had sufficient reason to try to adapt the AAPA to incorporate that design.

**2. Combining Ito with Johnson, Ambrosio, or Langworthy**

The evidence presented also demonstrates that the ordinarily skilled person would have had reason to improve upon Ito.[14] First, Ito uses beveled gears to transmit power from the motor to the saw. (*See* Jt. Ex. 7 at 13 (col.6 ll.22-26), 15 (Claims)); *see also* Tr. at 153:6 (Hatch).) As discussed, the use of beveled gears was criticized by Ushiwata, Katz, and Gililland. Second, Katz testified that the off-center placement of Ito's angled motor creates a weight imbalance that makes it "difficult to dial in a bevel angle precisely" when the user tilts the saw to the side where

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[power tool design]." *Nat'l Steel Car, Ltd. v. Canadian Pac. Ry., Ltd.*, 357 F.3d 1319, 1339 (Fed. Cir. 2004)

[14] Although Ito's application was filed with the PTO on May 18, 1993, and Hitachi's original '294 patent application was filed with the PTO on June 3, 1993, it is irrelevant whether Ushiwata himself knew of Ito when drafting the '294 patent, or whether Ushiwata had any reason to combine Ito with other prior art references. Findings of fact – such as whether there existed a reason to combine the prior art – are made from the perspective of the *hypothetical* person of ordinary skill in the field of invention. *See Glaverbel Societe Anonyme*, 45 F.3d at 1555. This hypothetical person "is presumed to know all the pertinent prior art, whether or not the [real-world] applicant is actually aware of its existence." *Carlson*, 983 F.2d at 1038.

the motor is. (Tr. at 54:13-21.) The Court finds that the ordinarily skilled person would have been aware of these shortcomings. That hypothetical inventor would therefore have had reason to improve upon Ito by redesigning its saw assembly and looking to the prior art for instruction on how to do so. Just as with the AAPA, the hypothetical inventor would consider the finite number of alternatives to Ito's angled motor and beveled gear transmission and find it obvious to try the parallel shaft structure and transmission means taught by Johnson, Ambrosio, and Langworthy.

**F. Secondary Considerations**

Hitachi has asserted that the '294 patent was not obvious in light of objective evidence that its design filled a long-felt but unsolved need in the industry for a dual-bevel desktop miter saw. (*See, e.g.*, Hatch Decl. at 1 ¶ 1; Katz Decl. ¶ 1; Tr. at 56:18-19 (Katz).) Hitachi has also argued that JPN '901 is evidence of a failed attempt to satisfy that need and further weighs in favor of the '294 patent's non-obviousness. (*See, e.g.*, Tr. at 202:23-203:7 (Hitachi's counsel).) Although the issue of "failure of others" is sometimes viewed as distinct from the issue of "long-felt need but unsolved need," they are complementary considerations, *see* Schechter & Thomas, *supra*, § 17.3.3.6, and the Court will consider them together.[15] *Accord Minn. Min. and Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 1574 (Fed. Cir. 1992) (finding that "long felt but unsolved need" was "established by the attempts and failures of the major players in the [] field"). Nonetheless, the Court finds that plaintiff has failed to satisfy its burden of demonstrating a long-felt need in the industry that others failed to solve.

The mere existence of a market demand or design need at the time the invention was made cannot, alone, constitute evidence of non-obviousness, because "design incentives and

[15] The issue of prior failures was also previously considered by the PTO, so it is properly raised in this action. (*See* Examiner's Decision at 10.)

other market forces" can in fact prompt *obvious* variations of existing inventions. *KSR*, 550 U.S. at 417; *see also supra* Section II(E). Similarly, "the mere passage of time without the claimed invention is not evidence of nonobviousness." *In re Kahn*, 441 F.3d 977, 990-91 (Fed. Cir. 2006) (quoting *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2004)). Rather, the need in question must be both "long-felt" and "unsolved." *See Monarch Knitting Machinery Corp. v. Sulzer Morat GmbH*, 139 F.3d 877, 884 (Fed. Cir. 1998) ("The relevant secondary consideration is 'long-felt *but unsolved need*,' not long-felt need in isolation." (emphasis in original)). If a "need was not only genuine, but long felt – that is, long *consciously* recognized," it permits the inference "that for a long period of time actual artisans were attempting to solve the problem," yet failed to do so. *Dickey-john Corp. v. Int'l Tapetronics Corp.*, 710 F.2d 329, 346 (7th Cir. 1983) (emphasis in original). "Actual documented failures of others" would further "enhance the inference that the patent in issue is a 'new display of ingenuity beyond the compass of the routineer . . . .'" *Id.* at 346 (quoting *Kirsch Mfg. Co. v. Gould Mersereau Co.*, 6 F.2d 793, 794 (2d Cir. 1925) (Hand, J.)). Thus, it is not the existence of the need, but rather the need's persistence and the elusiveness of its solution that weighs in favor of the non-obviousness of an invention that ultimately solves the problem. Accordingly, "[e]stablishing a long-felt need requires a showing that others skilled in the art" – here, the art of power tool design – "in fact perceived a need and that this perception persisted over a long period of time without resolution by the prior art." *Markman*, 987 F. Supp. at 43. The need is "analyzed as of the date of an articulated identified problem and evidence of efforts to solve that problem." *Texas Instruments Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1178 (Fed. Cir. 1993).

Hitachi established that the first single-bevel miter saws became widely available in the

United States in 1985 or 1986. (Tr. at 34:16-17 (Katz).) The single-bevel saw's limitations were immediately evident to finish carpenters working in compact workspaces. (Tr. at 35:5-12, 48:8-12 (Katz); *see also* Ushiwata Decl. ¶¶ 11-12.) In order to make left-hand and right-hand bevel cuts into a workpiece using a single-bevel saw, one must either "helicopter" the workpiece or flip it over. (*See* Tr. at 39:9-15 (Katz); Ushiwata Decl. ¶¶ 13-14.) Both methods have their limitations: helicoptering becomes less convenient as the width of the workspace approaches the length of the workpiece, while flipping is not a viable option for crown molding or other materials with only one flat surface that can rest stably on the saw's base. (*See* Ushiwata Decl. ¶¶ 13-14; Tr. at 37:15-41:7 (Katz); *id.* at 235:9-13 (Gililland).) In September 1986, Ushiwata developed his first dual-bevel saw design, which was published in 1988 as JPN '901. (Ushiwata Decl. ¶15.) In 1988, Hitachi introduced its sliding single-bevel miter saw into the American market. (Katz Decl., Ex. C at 1.) In early 1992, both Ushiwata and Ito finalized their dual-bevel designs that were eventually published in the 1993 U.S. filings of the '294 and Ito patents. (*See* Ushiwata Decl. ¶ 16; Jt. Ex. 7 at 1 (Ito's "Foreign Application Priority Data"); Tr. at 197:20-22 (PTO counsel).) Ito's saw was commercially available in the United States by late 1994 or early 1995, and the Hitachi device debuted shortly thereafter, around spring 1995. (Katz Decl., Ex. C at 1.) Hitachi thus presented evidence of a six or seven year gap between the domestic commercial introduction of single-bevel saws and the design of two production-worthy dual-bevel saws, and an eight to ten year gap until the domestic commercial introduction of those dual-bevel designs. Nonetheless, Hitachi failed to carry its burden of showing that its dual-bevel design satisfied a long-felt but unsolved need in the art.

First, the Court finds that Hitachi has not established that prior to 1992, the power tool design industry "had any *need* to move from" a single-bevel design to a dual-bevel one. *See*

*Radix*, U.S.P.Q.2d at 1695 (emphasis in original); *Orthopedic Equipment Co., Inc. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1382 (Fed. Cir. 1983) (affirming conclusion of obviousness because, *inter alia*, "there was no evidence that the industry perceived a [problem solved by the device in question] as a 'long felt but unsolved need'"); *cf. Ecolochem, Inc. v. S. Cal. Edison Co.*, 227 F.3d 1361, 1377 (Fed. Cir. 2000) (finding claim obvious where, *inter alia*, evidence showed that method for processing water was not developed "in response to a long-felt need in the power industry"). The Court credits Gililland's testimony that the power tool design industry did not perceive any articulated need for a dual-bevel saw during his employment at Emerson Electric, the world's largest manufacturer of power tools at the time. (*See generally* Tr. at 227-31.) Between 1988 and 1994, Gililland designed power tools for Emerson, which "made all of the power tools," including miter saws, for retailer Sears. (*Id.* at 226-27.) During that time, he participated in monthly product planning meetings and reviewed annual marketing surveys of power tool customers, yet "there was never a project for the development of a double bevel [saw]," and he did not recall any proposal or survey regarding double-bevel designs. (*Id.* at 229-30.)

Given Ushiwata's testimony that an "industry desire" for a dual-bevel saw existed "as of 1992" (Ushiwata Decl. ¶ 10), Hitachi's evidence does not meaningfully rebut Gililland's testimony. For example, Katz testified that the first major hardware review of a single-bevel sliding miter saw was published in 1990 and praised the single-bevel saw as a vast improvement over earlier tools for making compound cuts. (*See* Tr. at 35:16-19 ("[T]he sliding [single-bevel] compound miter saw that was introduced completely overwhelmed [the reviewers], just overnight people were no longer having to carry a 200 or 300-pound saw onto a job site."). This *favorable* review does not show that the industry recognized a need to *replace* the single-bevel

design; if anything, it tends to show that as late as 1990, there was no articulated need for an alternative design. Similarly, Hitachi introduced a 1995 tool buyer's guide that reviewed sliding compound miter saws but did not criticize the single-bevel design and noted the arrival of the Ito and Hitachi dual-bevel designs by simply stating that "[t]wo new saws . . . tilt both left and right." (Katz Decl., Ex. C at 1.)[16] The evidence establishes a "lack of demonstrated customer interest" for a dual-bevel saw during the relevant time period, and this "flatly contradict[s]" the possibility of a long-felt need. *Nat'l Steel Car, Ltd. v. Canadian Pac. Ry., Ltd.*, 357 F.3d 1319, 1340 (Fed. Cir. 2004).[17]

Second, the continued commercial availability of Hitachi's own single-bevel design as recently as "a few years ago" (Tr. at 328:3-6 (Gililland)) further undercuts the notion that there was a long-felt need for a dual-bevel design to replace the single-bevel saw. *Cf. Radix*, U.S.P.Q.2d at 1695. Plaintiff's evidence also shows that through at least 1999, tool reviewers

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[16] Only one of the tool reviews submitted with Katz's declaration discusses the limitations of the single-bevel design (*see* Katz Decl., Ex. D at 2), but this cursory reference does not establish the existence of an identified and persistent need in the industry between 1985 and 1992. And although Katz consulted on saw design with companies such as Makita, Ito's assignee (Katz Decl. ¶ 6), he did not testify that these consultations related to the industry's perceived need for double-bevel saws during the relevant time period. (*See* Tr. at 29-33.)

[17] Whatever customer interest did exist appeared limited to a subset of single-bevel saw users. Katz testified that the single-bevel design's limitations "wouldn't matter" in larger rooms (Tr. at 40:16-20) and that despite the availability of dual-bevel saws, finish carpenters "still prefer to whirly-bird their material around rather than swinging the saw to the second bevel, to the right-hand bevel, if it's easier to swing the material . . . ." (*Id.* at 42:17-23.) Plaintiff thus did not establish that carpenters *as a whole* were not content with their "work-around" of either helicoptering or flipping the workpiece (Tr. at 37:18 (Katz)), or even that finish carpenters who cut crown molding were not content with being limited to the helicoptering work-around. *See Nat'l Steer Car*, 357 F.3d at 1340 (finding insufficient evidence of long-felt need for railway car modifications where "customers were satisfied" with existing design); *cf. Radix*, U.S.P.Q.2d at 1695. Rather, those who were most dissatisfied with the single-bevel design appeared to be carpenters who regularly cut crown molding *in cramped workspaces*. Given this seemingly "niche market" for an alternative to single-bevel saws, "it is not surprising that it took a few years for a company to expand on the prior art at issue here." *Tokyo Keiso Co., Ltd. v. SMC Corp.*, 533 F. Supp. 2d 1047, 1060 (C.D. Cal. 2007), *aff'd* 307 F. App'x 446 (Fed. Cir. 2009).

evaluated many single-bevel and dual-bevel saws without suggesting that the latter design made the former obsolete (*see, e.g.*, Katz Decl., Ex. D at 1 ("The sliding compound miter saws reviewed here are among the most accurate, well-engineered, and just plain beautiful tools you'll ever own."), 5 ("We aren't going to hand out any prizes for first place.")), except in the specific context of cutting long workpieces in small workspaces. (*See id.* at 2 ("For those times when you can't stick that extra few feet of trim out the living room window, the double-compound feature is wonderful.").) Similarly, tool reviewers in April 1996 "had a hard time picking a 'winner'" from among the single-bevel and dual-bevel miter saws that they tested, because "[a]ll of them work well, and which model you select depends entirely upon your budget and requirements for cutting capacity and versatility." (*Id.*, Ex. E at 2.)

Third, the Court finds that Hitachi's attempt to point to JPN '901 as a failed attempt cannot succeed, because there is no evidence that JPN '901 did not actually accomplish its goal of tilting 45° in both directions. Rather, Ushiwata deemed it "not *viable*, mainly because the use of [a] bevel gear resulted in a *high cost design* that created unacceptable noise and gear backlash. (Ushiwata Decl. ¶ 15 (emphases added); *see also* Jt. Ex. 7 at 11 (Ito's criticism of JPN '901's design as too costly).) To the extent that Ushiwata decided against putting JPN '901 into production because of its cost, it "was thus not a failed attempt, but a calculated business judgment to abandon a potential new product line."[18] *DyStar Textilfarben GmbH & Co.*

[18] However, even if JPN '901 were a failed attempt, this single failure is not persuasive evidence of non-obviousness. Non-obviousness is determined from the perspective of the hypothetical inventor who, "unlike the ordinary artisan, has knowledge of *all* the pertinent prior art which would assist him in solving the problem." *Dickey-john*, 710 F.2d at 346 (emphasis in original). "Such knowledge is not likely attributable to any living person, or even an interdisciplinary team of inventors." Schechter & Thomas, *supra*, § 17.3.3.6. Therefore, the fact that one real-world inventor, Ushiwata, "failed for a time in finding the solution may be attributable to the simple fact that [he] failed to take advantage of the massive body of knowledge already in the public domain." *Dickey-john*, 710 F.2d at 346.

*Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1371-72 (Fed. Cir. 2006).

Accordingly, the Court concludes that the Hitachi device did not fill a long-felt but unsolved industry need.

## III. CONCLUSION

Based on the foregoing findings of fact and conclusions of law, the Court concludes that the person of ordinary skill in the art of power tool design would have had ample reason in the 1990s to try to combine the teachings of the AAPA or Ito with the saw assembly designs taught by Johnson, Ambrosio, or Langworthy in order to arrive at the subject matter disclosed in Claim 1 of the '294 patent and '517 application. It would have been obvious to try the "combination of known elements" in Claim 1 in order "to address a recognized problem," *Ball Aerosol*, 555 F.3d at 991, because "a person of ordinary skill in the art at the time of the invention would have recognized the value of using a known element" – a saw assembly whose motor and saw shafts were parallel but displaced by at least one blade radius, as taught by Johnson, Ambrosio, or Langworthy – as the saw assembly to be mounted on the AAPA or Ito's tiltable holder. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1262 (Fed. Cir. 2007). Claim 1 thus "'simply arranges old elements with each performing the same function it had been known to perform' and yields no more than one would expect from such an arrangement . . . ." *KSR*, 550 U.S. at 417 (quoting *Sakraida*, 425 U.S. at 282).

"Plaintiff has shown no 'persistent' problem . . . which evaded solution by those in the art. Rather, the evidence, including the prior art, more clearly indicates that plaintiff's [design] evolved through the exercise of ordinary skill in the natural and expected development of the art, and while it may have solved a problem, it did so in an obvious way." *Ellicott Mach. Corp. v. United States*, 405 F.2d 1385, 1391-92 (Ct. Cl. 1969). The Court concludes that the subject

matter of Claim 1 of plaintiff's Reissue Application 08/879,517 is obvious under 35 U.S.C. § 103(a) and therefore not patentable. Accordingly, the decision of the Board will be upheld. A separate order and judgment accompanies this Memorandum Opinion.

/s/
ELLEN SEGAL HUVELLE
United States District Judge

DATE: May 29, 2009