

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TIFFANY AND COMPANY,
Petitioner,

v.

LAZARE KAPLAN INTERNATIONAL, INC.,
Patent Owner.

Case IPR2015-00024
Patent 6,476,351 B1

Before MICHAEL P. TIERNEY, MICHELLE R. OSINSKI, and
JEFFREY W. ABRAHAM, *Administrative Patent Judges*.

ABRAHAM, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. §318 and 37 C.F.R. § 42.73

I. INTRODUCTION

Tiffany and Company (“Petitioner”) filed a Petition seeking *inter partes* review of claims 1 and 7 of U.S. Patent No. 6,476,351 B1 (Ex. 1001, “the ’351 patent”). Paper 2 (“Pet.”). Lazare Kaplan International, Inc. (“Patent Owner”) filed a Patent Owner Preliminary Response to the Petition. Paper 6 (“Prelim. Resp.”). We determined that there was a reasonable likelihood that Petitioner would prevail in challenging those claims as unpatentable. On April 20, 2015, the Board instituted trial to review the patentability of the challenged claims. Paper 7 (“Dec. on Inst.”).

After institution, Patent Owner filed a Patent Owner Response (Paper 12, “PO Resp.”), and Petitioner filed a Reply (Paper 24, “Reply”). An oral hearing was held on January 21, 2016. A transcript of the hearing has been entered into the record of the proceeding as Paper 33 (“Tr.”). Petitioner filed a motion to exclude certain evidence submitted by Patent Owner. Paper 26. Patent Owner filed an opposition (Paper 28) and Petitioner filed a reply to the opposition (Paper 30). In addition, there are multiple pending motions to seal various exhibits. Paper 13; Paper 25.

We have jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1 and 7 are unpatentable. In addition, we dismiss Petitioner’s Motion to Exclude Evidence as moot and we grant the pending Motions to Seal.

A. Related Proceedings

Patent Owner asserted the '351 patent in *Lazare Kaplan Int'l Inc. v. Photoscribe Techs., Inc.*, Case No. 1:06 CV 4005 (SDNY). Pet. 1; Paper 5. Petitioner is not a party to that proceeding.

B. The '351 Patent

The '351 patent discloses a method and system for microinscribing the surface of a gemstone using a laser. Ex. 1001, 1:14–17. The '351 patent shows one microinscribing apparatus in Figure 9, reproduced below.

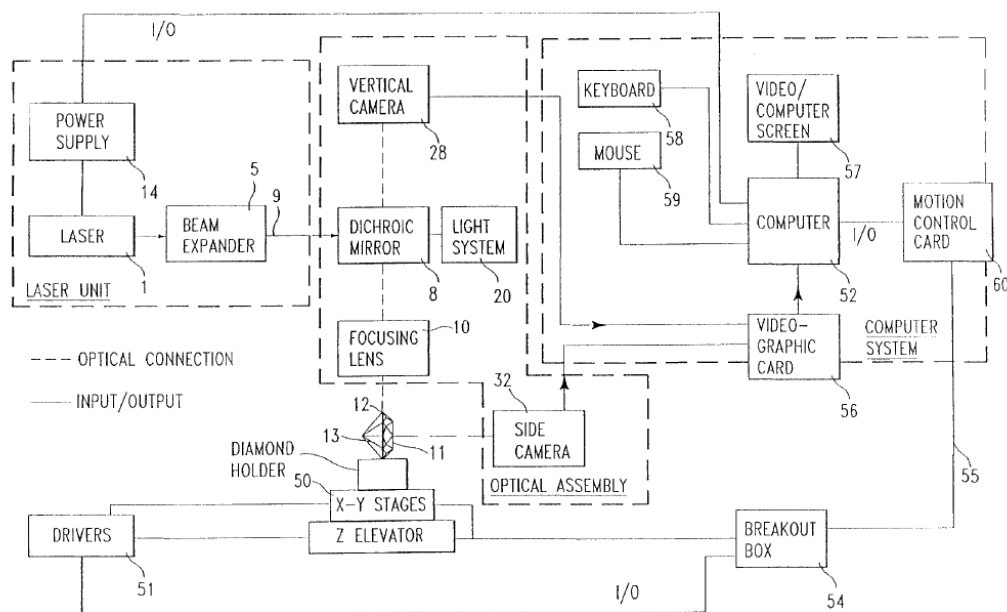


Figure 9 shows various components of a microinscribing apparatus, including laser 1, mirror 8 and focusing lens 10 for focusing laser energy from the laser onto gemstone/workpiece 11, displaceable stage 50, computer 52, and cameras 28 and 32. *Id.* at 15:33–44, 16:13, 16:44–54.

The '351 patent discloses that the gemstone is held in a mounting system that is mounted on a translatable stage. *See id.* at Figs. 7A–7E, Fig. 10 element 144. The laser does not move, and therefore, to generate the inscription, the translatable three-axis (XYZ) stage moves the workpiece in relation to the laser beam. *Id.* at 16:44–48. The translatable stage is “controlled by a computer to produce a complex marking pattern.” *Id.* at 2:47–48. The inscription data can be manually entered or generated by the computer. *Id.* at 20:15–23. The apparatus can include an assortment of fonts as well as custom or editable characters, such as logos and graphics. *Id.* at 20:3–14, 22:66–67.

Video cameras allow an operator to view the workpiece from a plurality of vantage points, provide for “optical feedback” of the inscription process, and can be used to ensure the correct positioning of the workpiece. *Id.* at 2:61–3:13, 16:51–17:8. “The optical feedback system also allows the operator to design an inscription, locate the inscription on the workpiece, verify the marking process and archive or store an image of the workpiece and formed markings.” *Id.* at 3:14–17, 18:13–17, 20:52–55.

According to one embodiment of the '351 patent, an operator inserts a gemstone into the apparatus and aligns it so that top and side views are displayed on video monitors. *Id.* at 18:31–33. The operator enters the inscription into the computer, and verifies the inscription positioning on the images of the gemstone displayed on the monitors. *Id.* at 18:33–39. Once the inscription positioning is verified, the computer sends commands to the inscription controller, which adjusts the position of the XYZ translatable stage accordingly to form the inscription pattern on the gemstone. *Id.* at 18:39–43.

C. Challenged Claims

Independent claims 1 and 7 are the only challenged claims, and are reproduced below:

1. A method of microinscribing a gemstone with laser energy from a pulse laser energy source, focused by an optical system on the workpiece, comprising the steps of:
 - mounting a gemstone in a mounting system;
 - directing the focused laser energy onto a desired portion of the gemstone;
 - imaging the gemstone from at least one vantage point;
 - receiving marking instructions as at least one input; and
 - controlling the directing of the focused laser energy based on the marking instructions and the imaging, to selectively generate a marking on the gemstone based on the instructions.
7. A laser energy microinscribing system, for gemstones, said system comprising:
 - a laser energy source;
 - a gemstone mounting system, allowing optical access to a mounted workpiece;
 - an optical system for focusing laser energy from the laser energy source, onto the gemstone to create an ablation pattern thereon;
 - means for directing said focused laser energy onto a desired portion of the gemstone, having a control input;
 - an imaging system for viewing the gemstone from at least one vantage point and obtaining image information from the gemstone;
 - an input for receiving marking instructions; and
 - a processor for controlling said directing means based on said marking instructions and said imaging system, to

selectively generate a marking based on said instructions and a predetermined program.

Ex. 1001, 26:53–65, 27:17–34.

D. References

Petitioner relies on the following references:

1. C. Paul Christensen, *Fine Diamonds With Laser Machining*, PHOTONICS SPECTRA 105–110 (Nov. 1993) (“Fine Diamonds,” Ex. 1007).
2. C. Paul Christensen, *Laser Processing Works on a Micro Scale*, INDUSTRIAL LASER REVIEW 1–4 (June 1994) (“ILR Article,” Ex. 1009).
3. Gresser et al., U.S. Patent No. 4,392,476, issued July 12, 1983 (“Gresser,” Ex. 1010).

E. Reviewed Grounds of Unpatentability

The Board instituted trial to review the patentability of the challenged claims on the following grounds:

Claims Challenged	Statutory Basis	Reference(s)
1 and 7	§103	Fine Diamonds
1 and 7	§103	Fine Diamonds and the ILR Article
1 and 7	§103	Gresser and the ILR Article

F. Level of Ordinary Skill in the Art

Petitioner’s declarant, Dr. Trumper, testifies that a person of ordinary skill in the art “would possess at least a bachelor’s degree in mechanical, electrical, manufacturing, or optical engineering, plus a few years of experience in the design and control of machines involving precision

motion, lasers, and optics.” Ex. 1003 (“Trumper Declaration”) ¶ 17. Patent Owner and its declarant, Dr. Bokor, adopted the level of ordinary skill in the art advanced by Dr. Trumper. PO Resp. 43–44 and n.4; Ex. 2005 (“Bokor Declaration”) ¶ 22.

For purposes of this decision, we credit the testimony provided by the declarants for both parties and hold that one of skill in the art would possess at least a bachelor’s degree in mechanical, electrical, manufacturing, or optical engineering, plus a few years of experience in the design and control of machines involving precision motion, lasers, and optics. This level of ordinary skill is reflected not only by the information presented by the parties, but also by the prior art of record. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art itself can reflect the appropriate level of ordinary skill in the art).

II. ANALYSIS

A. Claim Interpretation

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012); *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278 (Fed. Cir. 2015), *cert. granted sub nom. Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 890 (mem.) (2016) (No. 15-446). Claim terms are given their ordinary and customary meaning, as understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Only terms which are in controversy need to be construed explicitly, and then only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). In our Decision on Institution, we determined that only the “controlling” limitations required construction. Based on our review of the complete record, we maintain our determination that no other explicit constructions are necessary, and we address the “controlling” limitations below.

The “controlling” limitations¹

Petitioner proposes that, under the broadest reasonable interpretation, these limitations mean controlling the directing of the focused laser energy, or controlling the directing means, “based on automated or manual feedback derived from optical images of a gemstone before or during the laser burn process.” Pet. 4–5; Reply 3–11. Petitioner contends that support for this construction can be found within the Specification of the '351 patent. Pet. 5 (citing Ex. 1001, 5:57–6:4). Petitioner also contends that this construction is consistent with the Federal Circuit’s opinion in *Lazare Kaplan International, Inc. v. Photoscribe Technologies, Inc.*, 628 F.3d 1359, 1369 (Fed. Cir.

¹ The “controlling” limitations refer to the following:

“controlling the directing of the focused laser energy based on the marking instructions and the imaging, to selectively generate a marking on the gemstone based on the instructions” in claim 1; and

“a processor for controlling said directing means based on said marking instructions and said imaging system, to selectively generate a marking based on said instructions and a predetermined program” in claim 7.

2010), wherein the court, applying the standard in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), held that “one of ordinary skill in the art at the time of the invention would have understood the term ‘controlling the directing . . . based on . . . the imaging’ to include control based on either automated or manual feedback derived from optical images of a gemstone, before or during the laser burn process.” Pet. 5 (citing Ex. 1006, 14); Ex. 1003 ¶¶ 25–26.

In the Preliminary Response, Patent Owner stated that it did not “agree with much of the claim constructions” provided by Petitioner, but did not elaborate further and did not offer its own construction for these terms. Prelim. Resp. 10–11.

In the Decision on Institution, based on our review of the Specification of the ’351 patent, the Federal Circuit’s opinion in *Lazare Kaplan*, and the Trumper Declaration, we adopted Petitioner’s proposed construction, and construed the “controlling” limitations to include control based on either automated or manual feedback derived from optical images either before or during the laser inscription process. Dec. on Inst. 9.

In the Patent Owner Response, Patent Owner contends that the terms should be construed as follows:

Claim Limitation	LKI's Construction
Claim 1: controlling the directing of the focused laser energy based on the marking instructions and the imaging, to selectively generate a marking on the gemstone based on the instructions.	controlling the directing of the focused laser energy based on the marking instructions and electronic image information fed back from the imaging step, combined to selectively generate a marking on the gemstone based on the instructions.
Claim 7: a processor for controlling said directing means based on said marking instructions and said imaging system, to selectively generate a marking based on said instructions and a predetermined program.	a processor for controlling said directing means based on said marking instructions and electronic image information fed back from said imaging system, combined to selectively generate a marking based on said instructions and a predetermined program.

PO Resp. 15.

For the reasons explained below, we determine that Petitioner has shown by a preponderance of the evidence that claims 1 and 7 are unpatentable under either of the proposed constructions of the “controlling” limitations. Accordingly, we determine that it is unnecessary to resolve the parties’ dispute over the term “controlling.” *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed ‘to the extent necessary to resolve the controversy.’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). We provide below an analysis of the challenged claims under both constructions.

B. Asserted Grounds of Unpatentability

1. Introduction

Petitioner asserts that claims 1 and 7 are obvious in view of Fine

Diamonds alone, Fine Diamonds in combination with the ILR Article, and Gresser in combination with the ILR Article. To support these asserted grounds of unpatentability, Petitioner provides detailed explanations and the declaration of Dr. Trumper to show how the references disclose or suggest each claim limitation under either party's proposed constructions of the disputed claim terms.

In our Decision on Institution, we determined that Petitioner had made a threshold showing that the prior art discloses or suggests all limitations of the challenged claims, including the “controlling” limitations under Petitioner's proposed construction of those terms, sufficient for us to conclude that there was a reasonable likelihood that Petitioner would prevail in showing that the challenged claims were obvious in view of Fine Diamonds, the ILR Article, and/or Gresser.

Our Scheduling Order in this case cautioned Patent Owner that “any arguments for patentability not raised in the [Patent Owner Response] will be deemed waived.” Paper 8, 3. The Board's Trial Practice Guide, furthermore, states that the Patent Owner Response “should identify all the involved claims that are believed to be patentable and state the basis for that belief.” Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012). Furthermore, as the Board has stated, our governing statute and Rules “clearly place some onus on the patent owner, once trial is instituted, to address the material facts raised by the petition as jeopardizing patentability of the challenged claims.” *Johnson Health Tech Co. Ltd. v. Icon Health & Fitness, Inc.*, Case IPR2013-00463, slip op. 12 (PTAB Jan. 29, 2015) (Paper 41).

In its Response, with the exception of the “controlling” limitations,

Patent Owner does not challenge Petitioner's arguments and evidence demonstrating that the prior art discloses or suggests all limitations of the challenged claims. Patent Owner's arguments regarding the "controlling" limitations are made only under Patent Owner's construction of the "controlling" limitations. *See* PO Resp. 35–42.

Thus, with the exception of the "controlling" limitations under Patent Owner's construction, the record contains the same, and now undisputed and uncontested, arguments and evidence regarding whether the prior art discloses or suggests the limitations of the challenged claims as it did at the time of our Decision to Institute.

Based upon our review of the record, we agree with Petitioner's arguments and evidence presented in the Petition regarding whether Fine Diamonds, the ILR Article, and Gresser, disclose or suggest the limitations of the challenged claims. *See* Pet. 9–27, 55–59. Thus, we determine that the preponderance of the evidence supports a finding that Petitioner has demonstrated (1) that all limitations of the challenged claims are disclosed or suggested by one or more of Fine Diamonds, the ILR Article, and/or Gresser under Petitioner's proposed construction of the "controlling" limitations, and (2) that all non-"controlling" limitations of the challenged claims are disclosed or suggested by one or more of Fine Diamonds, the ILR Article, and/or Gresser, under Patent Owner's proposed claim construction of the "controlling" limitations.

In view of this, in our analysis below, we focus on Patent Owner's arguments presented in the Patent Owner Response, namely that (1) the applied references fail to disclose or suggest the "controlling" limitations recited in claims 1 and 7 under Patent Owner's construction of the terms, (2)

a person of ordinary skill in the art would not combine the ILR Article with Fine Diamonds or with Gresser, and (3) objective indicia of non-obviousness direct a finding of non-obviousness. PO Resp. 1–3; see Office Patent Trial Practice Guide, 77 Fed. Reg. at 48,766 (“The [Patent Owner] [R]esponse should identify all the involved claims that are believed to be patentable and state the basis for that belief.”).

2. Claims 1 and 7 as Obvious under § 103 in view of Fine Diamonds and the ILR Article

i. Fine Diamonds (Ex. 1007)

Fine Diamonds is an article authored by Dr. Paul Christensen discussing laser machining of diamonds. Ex. 1007, 105. Fine Diamonds discloses systems that combine “small laser sources with high-resolution imaging and precision motion-control systems for sculpting, planarizing, marking and patterning of diamond and diamond-like materials.” *Id.* at 106. Fine Diamonds depicts a laser micromachining configuration in Figure 2, which is reproduced below.

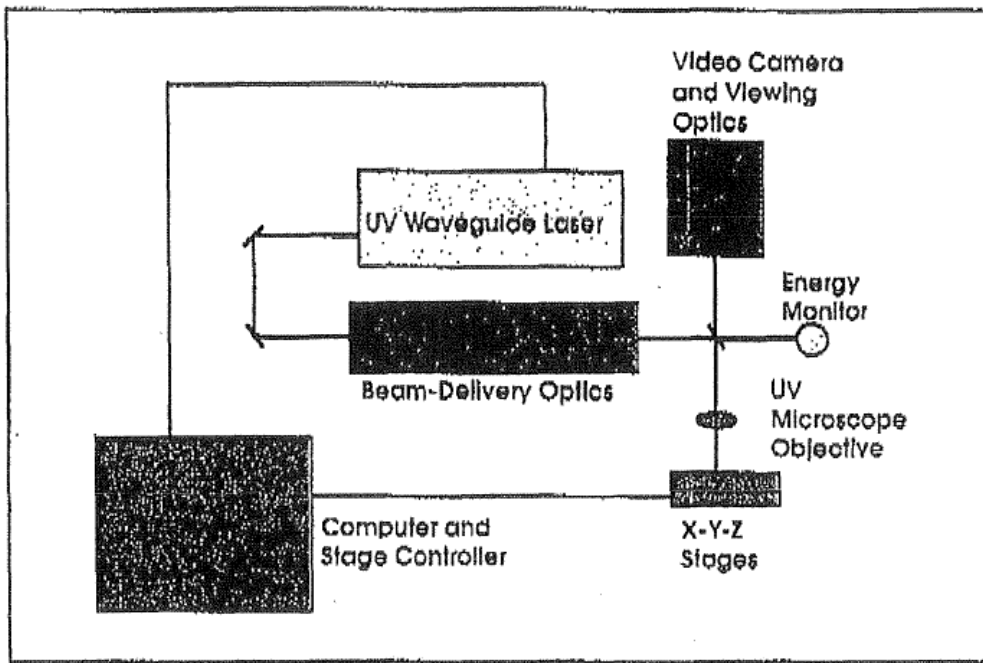


Figure 2 shows the components of the laser micromachining system, including a UV waveguide laser, beam delivery optics, a video camera, viewing optics, X-Y-Z stages, and a computer and stage controller. *Id.* Fine Diamonds discloses the use of CAD/CAM software not only to draw arbitrary shapes but also to allow the computer to control the stages such that complex shapes can be etched into the diamond substrate. *Id.* at 107–108. According to Fine Diamonds, the “CAD/CAM software and the direct-write approach to laser machining allows almost any shape to be generated in a diamond surface.” *Id.* at 108. The high resolution video cameras in Fine Diamonds allow the operator to monitor the machining process. *Id.*

ii. The ILR Article

The ILR Article, also authored by Dr. Christensen, discloses surface patterning of various materials, including diamonds, on a micro scale using a UV laser source. Ex. 1009, 2. The ILR Article describes “[d]irect write”

techniques, which “focus the entire beam of a smaller laser on the work surface and move the surface under the focused beam for pattern generation.” *Id.* The ILR Article further discloses computer control of the work surface motion, which allows for the production of CAD-generated shapes. *Id.* A generic direct-write UV laser station is depicted in Figure 2 of the ILR Article, which is reproduced below.

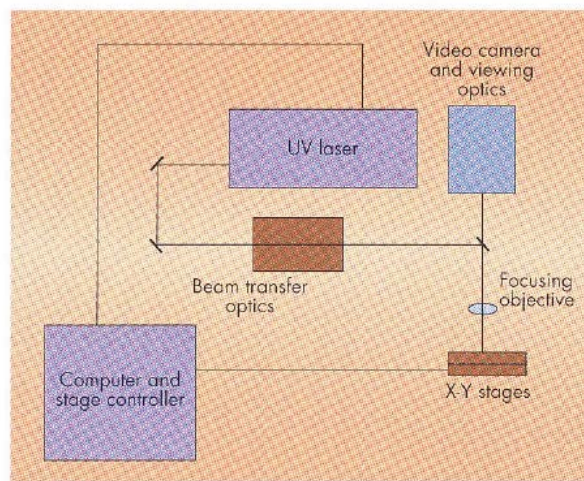


Figure 2 shows the UV laser station comprised of the laser itself in addition to beam transfer optics, a focusing objective, X-Y stages, video camera, viewing optics, and a computer and stage controller. *Id.* at 2–3. According to the ILR Article:

CAD/CAM interface simplifies motion programming and allows electronic control of processing speed, exposure parameters, and other features. This simplifies set-up, accelerates process development, and improves flexibility of the system in small batch processing. Video images generated by the viewing system can be digitized and processed to derive information used for autofocus, registration, orientation, edge-following, and other operations that make the laser tool easier and faster to use.

Id. at 3.

iii. The “controlling” limitations

Petitioner argues that, even under a construction of the “controlling” limitations that requires electronic image information to be fed back from the imaging step or system and combined with marking instructions to generate a marking on the gemstone, claims 1 and 7 are unpatentable as obvious in view of Fine Diamonds in combination with the ILR Article. Reply 12–15; Pet. 5, n.1, 59–60.

Petitioner contends that Fine Diamonds explicitly states that “optical tools **combine** the small laser sources with high-resolution imaging and precision **motion-controlled systems** for sculpting, planarizing, **marking** and patterning of diamond and diamond-like materials.” Reply 12 (quoting Ex. 1007, 2) (emphasis in Reply).

Petitioner further contends that the ILR Article discloses video images that are digitized and processed, which constitute electronic image information. *Id.* at 13 (citing Ex. 1009, 3). Petitioner argues that the ILR article teaches that electronic image information is fed back to the computer stage/controller because the ILR Article teaches that the digitized images are processed to “derive information used for autofocus, registration, and orientation.” *Id.*

Petitioner takes the position that the ILR Article’s reference to a CAD/CAM interface that “simplifies motion programming” corresponds to the marking instructions recited in the “controlling” limitations. *Id.* In view of this, Petitioner argues that:

The ILR Article, thus discloses the marking instructions (e.g., CAD/CAM programs of the motion-controlled systems) and the electronic imaging (i.e., high-resolution imaging) could be

automatically combined for “electronic control of processing speed, exposure parameters, and other features” during “set-up” or in process “for autofocus, registration, orientation, edge-following, and other operations that make the laser tool easier and faster to use.”

Id. at 13–14 (emphasis omitted).

Patent Owner argues that the quoted language in Fine Diamonds merely indicates that the optical tools of Fine Diamonds “use lasers, imaging, and motion-controlled systems, as shown in Fig. 2 of Fine Diamonds.” PO Resp. 36. Patent Owner contends that Figure 2 of Fine Diamonds does not show a connection between the video camera and the computer/stage controller, and without a connection between the camera and computer, “there is *no feedback* of the electronic image information and *no combination* of the marking instructions and electronic imaging information to generate a marking.” *Id.* at 37 (citing Ex. 2005 ¶ 37).

Patent Owner further argues that the ILR Article does not disclose the “controlling” limitations and therefore does not cure the deficiencies of Fine Diamonds. *Id.* at 39–42. In particular, Patent Owner contends that Figure 2 in the ILR Article is essentially the same as Figure 2 in Fine Diamonds, showing no connection from the video camera to the computer and stage controller. *Id.* at 38–39. Patent Owner thus argues that the video images are not fed back to the computer and stage controller, and cannot be combined with marking instructions to generate a marking. *Id.* at 40. Patent Owner further argues that the ILR Article discloses only that video images can be processed to derive information used for certain operations, and is silent as to how to perform image processing or what performs the image processing. *Id.* at 39.

Referring specifically to the statement in the ILR Article regarding video images being digitized and used for autofocus, registration, orientation, or edge-following, Patent Owner argues that “[n]one of the operations enumerated by this sentence discloses, or even suggests, ‘marking instructions’ and electronic image information *combined* to generate a marking.” *Id.* at 40, 42. According to Patent Owner, autofocusing would occur independently of the marking instructions, and registration and orientation refer to setting up a workpiece and selecting a starting point for the laser, respectively, and do not constitute a disclosure of an image fed back to a processor and combined with marking instructions. *Id.* at 40–41. Patent Owner further argues that “edge-following” does not have a commonly understood meaning in the relevant art, and that even if a person of ordinary skill in the art did understand that term to suggest “employing an image to perform some type of edge-following for laser inscription of a gemstone, the ILR Article does not disclose or suggest feedback of the digitized image combined with ‘marking instructions’ to generate a marking.” *Id.* at 41–42 (citing Ex. 2005 ¶ 83).

Upon consideration of the evidence and arguments presented by Patent Owner and Petitioner, we conclude that Petitioner has shown by a preponderance of the evidence that the ILR Article discloses the “controlling” limitations under Patent Owner’s construction.

Although Figure 2 of the ILR Article does not depict a physical connection between the video camera and the camera and stage controller, we are persuaded that the ILR Article discloses or suggests that the video images in the ILR Article (i.e., the electronic image information) are fed back to the computer. During the Oral Hearing, Patent Owner indicated that

the term “fed back” is broad and does not necessarily require a physical connection between the camera and the computer. Tr. 39:4–40:25 (arguing that the important aspect of the claim is that the image taken on the imaging device is itself transferred to the computer, as opposed to only calculations manually derived from that image being manually entered into the computer).

The purpose of the laser tool in the ILR Article is to provide surface patterning and ablations of diamonds with a UV laser source. Ex. 1009, 2. The ILR Article depicts a computer in Figure 2, and refers to the “[i]ntegration of a computer into the direct-write system.” *Id.* at 3. The ILR Article further discloses that “[v]ideo images generated by the viewing system can be digitized and processed to derive information used for” various “operations that make the laser tool easier and faster to use.” *Id.* We credit the testimony of Dr. Trumper that “the ILR Article makes clear that the computer digitizes and processes the optical images of a gemstone, and the automated feedback derived from the images is used for controlling the directing of the focused laser energy,” as it is consistent with the ILR Article’s disclosure of integrating a computer into the diamond ablation system. Ex. 1003 ¶ 56. Thus, despite the fact that the ILR Article does not expressly state that the computer is used to digitize and process the video images, it would have been obvious to a person of ordinary skill in the art that integrating the computer into the direct write system would include using the computer (shown in Fig. 2) to digitize the video images generated by the viewing system and process them to conduct the various operations that make the laser tool easier to use. *KSR Int’l Co. v. Teleflex Inc.*, 550 US

398, 421 (2007) (“A person of ordinary skill is also a person of ordinary creativity, not an automaton.”).

Furthermore, as noted above, the ILR Article teaches that “[c]omputer control of work surfaces allows direct production of CAD-generated shapes” on diamond surfaces. Ex. 1009, 2. Petitioner contends, and Patent Owner does not contest, that the CAD/CAM programs correspond to the required “marking instructions.” Pet. 25–26 (citing Ex. 1009, 2); Ex. 1003 ¶ 56 (Dr. Trumper stating “marking instructions (e.g., motion programming of the CAD/CAM program)”). Additionally, the ILR Article discloses that the “CAD/CAM interface . . . allows electronic control of processing speed, exposure parameters, and other features” of the laser tool that “simplifies set-up [and] accelerates process development.” Ex. 1009, 3. As Petitioner points out, the next sentence in the very same paragraph discusses digitizing and processing the video images. Reply 13. In view of this, we determine that a person of ordinary skill in the art, reviewing the ILR Article, would have understood the ILR Article to disclose or suggest using the computer to control and operate the laser tool to generate shapes based on a combination of two inputs, the CAD/CAM programs (i.e., “marking instructions”) and images fed back to the computer and digitized therein (i.e., electronic image information), which “simplif[y] set-up [and] accelerate[] process development” and “make the laser tool easier to use.”² Ex. 1009, 3; Reply 13; Ex. 1003 ¶ 55.

² This is especially true considering Patent Owner’s argument that the “combined” language in the controlling limitations is not limited to overlaying marking instructions on an image. Tr. 48:15–22.

We are not persuaded by Patent Owner's arguments regarding autofocus, registration, orientation and edge-following, as they relate to the digitized and processed images. *See* PO Resp. 40–42. Nor do we credit Dr. Bokor's testimony in this regard. *See* Ex. 2005 ¶¶ 78–82. First, we note that the ILR Article is not limited to those operations, as it refers generically to “other operations.” Ex. 1009, 3. Next, Patent Owner and Dr. Bokor's contentions that none of these operations disclose or suggest marking instructions and image information *combined* to generate a marking ignores the ILR Article's disclosure, in the very same paragraph, of the use of CAD/CAM programming to simplify motion programming and allow electronic control of certain aspects of the laser tool. PO Resp. 40–42; Ex. 2005 ¶¶ 78–82; Reply 13–14.

Finally, Patent Owner and Dr. Bokor acknowledge that a person of ordinary skill in the art would interpret the terms registration and orientation “as occurring at *setup*, for example, by moving a workpiece under a laser, and selecting a starting point for the laser to begin firing, based on information derived from a digitized workpiece image.”³ PO Resp. 41; Ex. 2005 ¶ 80 (emphasis added). Thus, based on Patent Owner's own arguments, and in view of its own declarant's testimony, the ILR Article not only expressly teaches the use of a CAD/CAM interface (i.e., marking instructions) to simplify “set-up,” but also teaches the use of digitized video images (i.e., electronic image information) to derive information used for operations associated with set-up (registration and orientation). Therefore,

³ We note that this statement undermines Patent Owner's earlier argument that the “ILR Article is silent regarding setting up the substrate for machining and does not disclose any technique for determining a starting point or initial focus.” PO Resp. 39.

contrary to Patent Owner’s arguments, we determine that a person of ordinary skill in the art would have understood that the ILR Article discloses or suggests that images are fed back to a processor and combined with marking instructions for, at the very least, setting up the laser inscription machine.

Thus, although Patent Owner also argues that its proposed construction of the controlling limitations “distinguishes over systems that use gemstone images for *setup—independent of ‘marking instructions’*” (PO Resp. 29 (emphasis added)), the ILR Article discloses or suggests using images for set up in combination with marking instructions. Moreover, as Patent Owner points out, the Federal Circuit stated that the “controlling” limitations include “control based on . . . feedback derived from optical images of a gemstone, *before* or during the laser burn process.” Ex. 1006, 14 (emphasis added); PO Resp. 31–32. We note that Patent Owner argues that its proposed construction is consistent with the 2010 Federal Circuit opinion. PO Resp. 29–32.

For all of the reasons discussed above, we determine that the ILR Article discloses or suggests the “controlling” limitations of claims 1 and 7. Petitioner has identified sufficiently where the additional limitations of claims 1 and 7 are present in Fine Diamonds and the ILR Article, and Patent Owner does not argue otherwise. We, therefore, conclude that Petitioner has shown by a preponderance of the evidence that Fine Diamonds and the ILR article disclose or suggest all elements of claims 1 and 7.

iv. The Combination of Fine Diamonds with the ILR Article

Petitioner argues that it would have been obvious to a person of ordinary skill in the art to combine the teachings of the ILR Article with the teachings of Fine Diamonds because both references relate to using similar UV laser micromachining systems in the same way to yield predictable results. Pet. 24; Ex. 1003 ¶¶ 51–57. In particular, Petitioner argues that a person of ordinary skill in the art would have been motivated to

combine the features taught by the ILR Article relating to automated control of the focused laser energy, including use of translatable stages to assist with that purpose, based on both the programmed marking instructions and automated feedback using digitized images from video images of the relevant portion of a gemstone, into the method and system taught by Fine Diamonds, for example, to “simplif[y] set-up, accelerate[] process development, and improve[] flexibility of the system” and “make the laser tool easier and faster to use.”

Pet. 24 (citing Ex. 1009, 2; Ex. 1003 ¶¶ 51–57). Petitioner also notes that Dr. Christensen was the author of both articles. *Id.*

In response, Patent Owner contends that the statements by Petitioner’s declarant, Dr. Trumper, regarding the predictability of combining Fine Diamonds with the ILR Article are “without basis” because “there is no evidence of an actual system combining the features of Fine Diamonds and the ILR Article.” PO Resp. 43. Patent Owner further contends that the ILR Article does not provide any “technique or guidance” that would allow a person of ordinary skill in the art to “implement the disclosed image processing of the ILR Article in Fine Diamonds.” *Id.* at 44. In support of its arguments, Patent Owner directs us to testimony from Dr. Christensen allegedly describing that his attempt at “implementing the image processing set forth in the ILR Article” was not successful. *Id.* at 44–45 (citing Ex.

2011, 33:15–35:11, 38:24–39:15, 53:3–6). Based on this, Patent Owner takes the position that combining the ILR Article with Fine Diamonds would not have yielded predictable results and would have been beyond the skill of a person of ordinary skill in the art. *Id.* at 45.⁴

As explained below, upon consideration of the evidence in this record, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that combining the technical disclosures of the ILR Article and Fine Diamonds would be merely a predictable use of prior art elements according to their established functions—an obvious improvement. *See KSR*, 550 U.S. at 417 (“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond [his or her] skill.”).

Dr. Trumper testifies that both articles are authored by Dr. Christensen, describe laser micromachining systems, and share a similar, if not identical, configuration. Ex. 1003 ¶ 54. Dr. Trumper also testifies that the ILR Article “makes clear that the computer digitizes and processes the optical images of a gemstone and the automated feedback derived from the images is used for controlling the directing of the focused laser energy.” *Id.* ¶ 56. Further, as Petitioner and Dr. Trumper note, the ILR Article expressly teaches that use of a CAD/CAM interface (i.e., “marking instructions”) and digitized images (i.e., “electronic image information”) “simplifies set-up, accelerates process development, and improves flexibility of the of the system,” and also “make[s] the laser tool easier and faster to use.” Ex. 1009,

⁴ Patent Owner emphasizes that “Dr. Christensen’s testimony is being only provided for defining the level of skill.” PO Resp. 47.

3. We credit Dr. Trumper’s testimony regarding the use of the computer in ILR to digitize and process images as it is consistent with the disclosure in the ILR Article of integrating a computer into the diamond ablation system. *Id.*; Ex. 1003 ¶ 56. We also credit Dr. Trumper’s testimony that it would have been obvious to a person of ordinary skill in the art to combine Fine Diamonds and the ILR Article in view of the similarities between the configurations and uses of the UV laser micromachining machines in the two references (*see, e.g.*, Figure 2 in Fine Diamonds and the IRL Article) and the potential advantages attributed to digitizing and processing images in the ILR Article. Ex. 1009, 3; Ex. 1003 ¶ 54–55; Ex. 1007, 2–3. Thus, the evidence presented by Petitioner demonstrates sufficiently that the ILR Article discloses an improvement for a laser micromachining system, and that a person of ordinary skill in the art would recognize that it would improve similar devices, such as the laser micromachining system disclosed in Fine Diamonds, in the same way.

We are not persuaded by Patent Owner’s argument that combining Fine Diamonds with the ILR Article would have been beyond the level of skill held by a person of ordinary skill in the art. Dr. Christensen’s testimony is directed to “the first work [that] was done in connection with a sale to a company” in the early 1990s. Ex. 2011, 35:14–19. According to Dr. Christensen, he demonstrated the device to the customer who was not “too satisfied with the robustness of it; it was having some difficulty capturing the fiducials in every part because there was part to part variation in these sorts of things.” *Id.* at 39:2–10. Ultimately the customer refused to accept the product based on its performance. *Id.* at 39:12–15. As Petitioner points out, neither Dr. Christensen’s testimony nor Patent Owner explains

the standards imposed by the customer or why failing to meet this particular customer's satisfaction demonstrates that combining Fine Diamonds with the ILR Article would have been beyond the level of skill in the art.

In addition to reiterating Dr. Christensen's testimony, which we address above, Dr. Bokor characterizes the disclosure of the ILR Article as "thin," stating that it "does not describe what the enumerated operations are, much less provide any technique or guidance that a POSITA could follow to implement the enumerated operations in combination with Fine Diamonds." Ex. 2005 ¶ 85. In preceding paragraphs of his declaration, however, Dr. Bokor testifies that a person of ordinary skill in the art "may understand [autofocus] as a computer analyzing an image and deriving information for adjustments to bring the image into focus," (*id.* ¶ 79), and that a person of ordinary skill in the art would interpret registration and orientation as "occurring at setup, for example, by moving a workpiece under a laser, and selecting a starting point for the laser to begin firing, based on information derived from a digitized workpiece image" (*id.* ¶ 80).

We thus determine that Patent Owner has not persuaded us that combining the teachings of the ILR Article with Fine Diamonds would have been beyond the level of an ordinary skilled artisan. *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 550 U.S. at 418).

Nor are we persuaded by Patent Owner's arguments that Dr. Trumper's testimony is undermined by the fact that "there is no evidence of an actual system containing all features of Fine Diamonds and the ILR Article." PO Resp. 43. An obviousness challenge, by nature, is premised on

the lack of a single device or reference that discloses, either inherently or expressly, all of the features of the claimed invention. 35 U.S.C. § 103.

For the foregoing reasons, we credit the testimony of Dr. Trumper that it would have been obvious to a person of ordinary skill in the art to combine the teachings of Fine Diamonds and the ILR Article (Ex. 1003 ¶¶ 54–56) over Dr. Bokor’s testimony that a person of ordinary skill in the art would not combine the teachings from these references (Ex. 2005 ¶¶ 85–90). We are persuaded that Petitioner has articulated a reason with rational underpinning why one with ordinary skill in the art would have combined the ILR Article and Fine Diamonds as indicated in the Petition, and we are persuaded that Petitioner’s reason to combine these references is supported by a preponderance of evidence.

3. Claims 1 and 7 as Obvious under 35 U.S.C. § 103 in view of Gresser and the ILR Article

i. Introduction

Petitioner contends that Gresser in combination with the ILR Article renders obvious claims 1 and 7 of the ’351 patent. Pet. 55–59. In the Petition, Petitioner argues that Gresser discloses all of the limitations of claims 1 and 7 with the exception of the “controlling” limitations. *Id.* For this ground, Petitioner relies on the ILR Article as disclosing the “controlling” limitations. *Id.*

In the Preliminary Response, Patent Owner argued that Gresser does not disclose “imaging” or an “imaging system” (“the imaging limitations”) as required in claims 1 and 7, respectively, and that Petitioner did not contend that the ILR Article cured this deficiency. Prelim. Resp. 24–25.

Patent Owner noted that the Patent Office already considered the question of whether Gresser disclosed the imaging limitations during prosecution of the application that ultimately led to the '351 patent, and determined that Gresser did not disclose these limitations. *Id.* Patent Owner thus requested that the Board exercise its discretion under 35 U.S.C. § 325(d) and decline to institute on this ground. *Id.*

In our Decision on Institution, we decided not to revisit the question of whether Gresser discloses the imaging limitations in claims 1 and 7 pursuant to 35 U.S.C. § 325. Dec. on Inst. 20–21. We also determined that although Petitioner did not expressly argue that the ILR Article discloses or suggests the imaging limitations in claims 1 and 7, the ILR Article does disclose these limitations, based on similarities between the ILR Article and Fine Diamonds and Petitioner's arguments that Fine Diamonds discloses the imaging limitations. *Id.* at 22.

In its Response, Patent Owner does not dispute our determination that the ILR Article discloses the imaging limitations of claims 1 and 7. As discussed above, we consider any arguments not raised in the Response to be waived. Accordingly, in the analysis below, we focus on Patent Owner's arguments raised in the Patent Owner Response, namely that the ILR Article fails to disclose or suggest the “controlling” limitations under Patent Owner's construction and that a person of ordinary skill in the art would not combine the ILR Article with Gresser. *See* PO Resp. 47–50.

ii. Gresser

Gresser discloses a method and apparatus for inscribing precious stones, such as diamonds. Ex. 1010, 2:13–16. Gresser depicts one

embodiment of its inscription system in Figure 1, which is reproduced below.

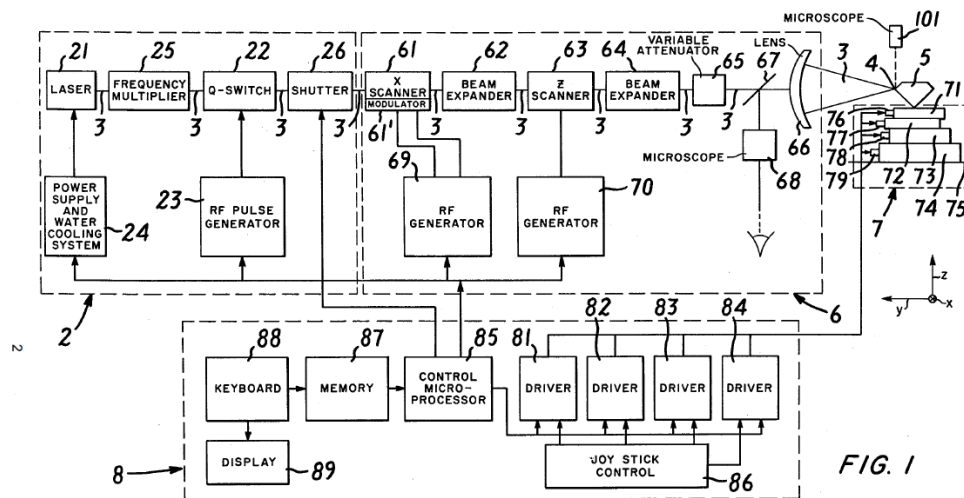


Figure 1 of Gresser shows laser beam generation system 2, table system 7 supporting diamond 5, a computer control system 8 that controls the table system and laser generator, and microscopes 68 and 101 that provide direct viewing of the diamond from the front and above, respectively. Ex. 1010, 2:13–68, 4:46–51.

iii. The “controlling” limitations

In support of this asserted ground of unpatentability, Petitioner relies upon the same arguments and evidence discussed above to establish that the ILR Article discloses the “controlling” limitations, and Patent Owner largely relies upon the same arguments and evidence to rebut Petitioner’s contentions. Reply 18; PO Resp. 47–48. The only additional argument presented with regard to the combination of Gresser and the ILR Article is Patent Owner’s contention that “[e]ven if Gresser’s measurements were obtained using the ILR Article’s video camera, those measurements would

not meet the claimed controlling” limitations because modifying Gresser by the ILR Article to include a video camera “still would not render obvious feedback of the captured image information.” PO Resp. 48. Patent Owner equates the combination of Gresser and the ILR Article to the combination of Gresser and another prior art reference, Ehrenwald,⁵ considered by the examiner during prosecution of the application leading to the ’351 patent.

We are not persuaded by Patent Owner’s argument. As Petitioner notes, Ehrenwald is not a reference at issue in this proceeding, and Patent Owner has not explained adequately why the combination of the ILR Article and Gresser would be “no different” than the combination of Gresser and Ehrenwald. *See* Reply 18. We note that the basis for Petitioner’s argument that the ILR Article discloses the “controlling” limitations is not simply incorporating the video cameras disclosed in the ILR Article into Gresser, as Petitioner additionally relies on the ILR Article’s disclosure of the combination of a CAD/CAM interface and information derived from digitizing and processing video images to direct the focused laser energy. Pet. 57–58 (referring to the combination of motion programming and video images generated by the viewing system); Reply 18. Furthermore, for the reasons discussed above, we agree with Petitioner that the ILR Article discloses or suggests the “controlling” limitations in view of the ILR Article’s combination of CAD/CAM programming and video images which are digitized and processed (i.e., fed back to a computer) to provide information used to simplify and speed up the operation the laser tool. Reply 12–15.

⁵ Ehrenwald et al., U.S. Patent No. 4,467,172, issued Aug. 21, 1984.

Accordingly, we determine that Petitioner has demonstrated by a preponderance of the evidence that the ILR Article discloses the “controlling” limitations of claims 1 and 7. Petitioner has identified sufficiently where the additional limitations of claims 1 and 7 are present in Gresser and the ILR Article and Patent Owner does not argue otherwise. We, therefore, conclude that Petitioner has shown by a preponderance of the evidence that Gresser and the ILR article disclose or suggest all elements of claims 1 and 7.

iv. The Combination of Gresser with the ILR Article

Petitioner argues that a person of ordinary skill in the art would have been motivated to combine, and capable of combining, the teachings of the ILR Article and Gresser because both references teach using similar UV laser micromachining systems in the same way. Pet. 56; Ex. 1003 ¶¶ 77–82. In particular, Petitioner argues that a person of ordinary skill in the art would have been motivated to

combine the features taught by the ILR Article relating to automated control of the focused laser energy, including use of translatable stages to assist with that purpose, based on both the programmed marking instructions and automated feedback using digitized images from video images of the relevant portion of a gemstone, into the method and system taught by Gresser, for example, to “simplif[y] set-up, accelerate[] process development, and improve[] flexibility of the system” and “make the laser tool easier and faster to use.”

Pet. 56 (citing Ex. 1009, 2; Ex. 1003 ¶¶ 78–82).

Patent Owner argues that a person of ordinary skill in the art would not have combined Gresser with the ILR Article for the same reasons a person of ordinary skill in the art would not have combined Fine Diamonds

with the ILR Article. PO Resp. 49–50. According to Patent Owner, in view of the difficulties experienced by Dr. Christensen regarding the combination of the ILR Article and Fine Diamonds, “a combination of the limited disclosure of the ILR Article with the decades-old technology from Gresser would not have yielded predictable results.” *Id.* at 50 (citing Ex. 2005 ¶ 94).

We apply the same reasoning discussed above with regard to the combination of Fine Diamonds and the ILR Article to the combination of Gresser and the ILR Article. In view of Dr. Trumper’s testimony and the express teachings of the ILR Article, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that combining the technical disclosures of the ILR Article and Gresser would have been merely a predictable use of prior art elements according to their established functions—an obvious improvement. *See KSR*, 550 U.S. at 417. We credit Dr. Trumper’s testimony that it would have been obvious to a person of ordinary skill in the art to combine Gresser and the ILR Article because the references disclose using similar laser inscribing systems and components in the same way, and in view of the potential advantages attributed to digitizing and processing images in the ILR Article, and using those images in combination with CAD/CAM programming to operate the laser inscribing system. Ex. 1003 ¶ 80–82. Also, as noted above, we are not persuaded that Dr. Christensen’s testimony establishes sufficiently that combining Gresser with the ILR Article would have been beyond the level of skill held by a person of ordinary skill in the art. In addition to the reasons discussed above regarding the deficiencies in Dr. Christensen’s testimony, we note that Dr. Christensen’s testimony is not directed towards the Gresser reference.

Thus, based on the evidence of record, we are persuaded that Petitioner has articulated a reason with rational underpinning why one with ordinary skill in the art would have combined the ILR Article and Gresser as indicated in the Petition, and we are persuaded that Petitioner's reason to combine these references is supported by a preponderance of evidence.

4. Objective Indicia of Non-obviousness

Patent Owner argues that the invention claimed in the '351 patent experienced commercial success and was copied, and that these objective indicia of non-obviousness direct a finding of non-obviousness. PO Resp. 50.

i. Commercial Success

As evidence of commercial success, Patent Owner relies on a 1996 License between Patent Owner and GIA, wherein GIA agreed to exclusively use LKI's technology to inscribe diamonds. *Id.* at 52. According to Patent Owner, GIA used the '351 patent technology to inscribe diamonds included in GIA's Diamond Dossier®, which is

a type of report performed by a GIA gemologist after evaluating a diamond, and includes characteristics like grading information (*e.g.*, the 4Cs) and proportions of the diamond. (Ex. 2026.) The report number of the Diamond Dossier® is laser-inscribed onto the evaluated diamond. (Ex. 2028, 4-5.) The characteristics "follow" the diamond (Ex. 1010, 1:14-17), because the inscribed report number can be used to identify the report.

Id.

According to Patent Owner, prior to the 1996 license agreement, GIA performed laser inscriptions of diamonds using prior art technology, and only performed a few inscriptions per month. But "[w]hen GIA introduced

the Diamond Dossier® in 1998 under the 1996 agreement, the number of inscriptions per month skyrocketed.” *Id.* at 53. Patent Owner thus argues that because the 1996 license required GIA to pay a flat fee per inscription and a success fee if GIA conducted over a certain number of inscriptions each year, “[f]rom [Patent Owner’s] perspective, the 1996 License was commercially successful, because of the large number of inscriptions that GIA performed pursuant to the agreement, and the accompanying royalties. (Ex. 2007; Ex. 2008 ¶ 9).” *Id.* at 54.

Patent Owner further argues that there is a nexus between the commercial success of the 1996 License and the claimed invention. *Id.* Patent Owner directs us to Schedule 1 of the 1996 License, which lists the components of the “Laser Based Diamond Inscribing System” that was the subject of the 1996 License. *Id.* at 54–55. According to Patent Owner, the components listed in Schedule 1 are similar to components listed in the Specification of the ’351 patent, and Schedule 1 also contains a section entitled “Mode of Operation” which is similar to the “Mode of Operation” described in the ’351 patent. *Id.* at 55 (citing Ex. 2022, 35–36; Ex. 1001 15:12–31, 16:44–50).

In addition, Patent Owner argues that the “claimed invention of the ’351 Patent encompasses combining the ‘marking instructions’ and the electronic image information, *e.g.*, the overlay described in the specification,” and that the Specification “describes this invention as providing increased throughput.” *Id.* at 54; Ex. 1001, 19:55–62 (stating that “40 stones per hour throughput is possible using the apparatus according to the present invention”). Patent Owner notes that the 1996 License explicitly references the same overlay and corresponding throughput, and therefore

contends that the 1996 License “conveyed to GIA the invention of combining the ‘marking instructions’ and the electronic image information encompassed by the claims of the ’351 Patent, and linked this invention to the expected throughput increases that was borne out by the actual number of inscriptions performed under the 1996 License.” PO Resp. 55.

Petitioner argues that Patent Owner has failed to establish sufficiently a nexus between the claims at issue and the purported commercial success. Reply 19. Petitioner contends that the 1996 License agreement covered “significantly more than the inventions in the claims-at-issue,” including other patents, training, equipment, and know-how. *Id.* at 20–21.

Additionally, Petitioner contends that Patent Owner links the commercial success of the 1996 License to the Diamond Dossier®, but the Diamond Dossier® is not encompassed by claim 1 or claim 7. *Id.* at 21, 22 (noting that other claims of the ’351 patent and related patents arguably encompass the Diamond Dossier report). Petitioner further argues that even if Patent Owner’s claims regarding the increased throughput of inscribed stones being a result of the combined use of marking instructions and electronic image information are true, marking gemstones was not the reason for the commercial success of the Diamond Dossier®. Instead, according to Petitioner, the commercial success of the Diamond Dossier® was a result of the combination of a unique inscription on a gemstone being associated with a unique Diamond Dossier® report. *Id.* at 21–22 (citing Ex. 1019, 33:19–34:3). In view of this, Petitioner argues that “[t]he commercial success of the Diamond Dossier® report, which LKI acknowledges was an essential part of the commercial success, is therefore related to unclaimed features

and thus irrelevant to the validity of the claims-at-issue.” *Id.* at 22 (emphasis omitted).

We are not persuaded by Patent Owner’s showing regarding commercial success.

The Federal Circuit has held that “[e]vidence of commercial success . . . is only significant if there is a nexus between the claimed invention and the commercial success.” *Ormco Corp. v. Align Tech. Inc.*, 463 F.3d 1299, 1311–1312 (Fed. Cir. 2006). Additionally, “[i]f the commercial success is due to an unclaimed feature of the device, the commercial success is irrelevant. So too if the feature that creates the commercial success was known in the prior art, the success is not pertinent.” *Id.* at 1312; *see also In re Kao*, 639 F.3d 1057, 1070 (Fed. Cir. 2011) (requiring a determination of “whether the commercial success of the embodying product resulted from the merits of the claimed invention as opposed to the prior art or other extrinsic factors”).

The only claimed features that Patent Owner contends were not known in the prior art are the “controlling” limitations of claims 1 and 7. Thus, Patent Owner has the burden of demonstrating that the “controlling” limitations, as opposed to other claimed or unclaimed features in the prior art, led to the alleged commercial success. *See Ormco*, 463 F.3d at 1311–1313; *In re Kao*, 639 F.3d at 1070; Tr. 60:15–70:7.

Patent Owner bases its commercial success contentions on the 1996 License Agreement. *See* Tr. 62:6–11. Patent Owner, however, has failed to demonstrate sufficiently that the licensing revenue it received from this agreement was due to the fact that the “Laser Based Diamond Inscribing System” that was the subject of the 1996 License “control[led] the directing

of the focused laser energy based on the marking instructions and the imaging, to selectively generate a marking on the gemstone based on the instructions.”

Although similar language regarding the operation of the laser system, including “painting” and the throughput, appears in both the Specification of the ’351 patent and the 1996 License, the license also encompasses several unclaimed features, such as training, equipment, and technical know-how. *See* Ex. 2022, 6–7. Similarly, in addition to “painting,” the ’351 patent and the 1996 License indicate that “[t]he rest of the operations, e.g., locating optimal place for inscription” (listed separately from “painting”) and the skill of the operator influence the throughput. Ex. 1001, 19:55–62; Ex. 2022, 43 (stating that certain steps “should take a properly trained operator 30–40 seconds”). The record, however, lacks credible and persuasive evidence demonstrating that the alleged commercial success resulted from the “controlling” limitations, as opposed to unclaimed features such as training, equipment, and/or technical know-how. Additionally, to the extent Patent Owner relies on the Diamond Dossier® as evidence of the alleged commercial success,⁶ this is yet another unclaimed feature.

Nor are we apprised of any credible evidence demonstrating that the alleged commercial success is due to the “controlling” limitations as opposed to a different claimed feature, such as those for which Patent Owner

⁶ At the Oral Hearing, counsel for Patent Owner stated that Petitioner’s “focus on the diamond dossier report is misplaced. The success that we’re pointing to here for secondary considerations is based on the licensing revenue that [Patent Owner] obtained by meeting the performance standards that are set forth in the license agreement, and those are based on the unique aspects of the claimed invention.” Tr. 62:6–11.

has waived any argument that they were not already part of the prior art. Therefore, although the “controlling” limitations may contribute to the increased throughput, the evidence suggests that there are other, unclaimed factors which also contribute to the feature that provided the alleged commercial success.

Thus, we find that Patent Owner has not established by a preponderance of evidence the requisite nexus between the claimed invention and commercial success. *Tokai Corp. v. Easton Enters., Inc.*, 632 F.3d 1358, 1369 (Fed. Cir. 2011) (“If commercial success is due to an element in the prior art, no nexus exists.”); *see also Ormco*, 463 F.3d at 1313 (reasoning that success that is due “‘partially’ to claimed features” and to unclaimed features and/or other features already in the art lacks the requisite nexus to show unobviousness) (citations omitted).⁷

ii. *Copying*

Patent Owner argues that Photoscribe Technologies, Inc. copied the technology claimed in the ’351 patent. PO Resp. 56–57. Patent Owner filed a lawsuit in District Court against Photoscribe, which is currently pending. According to Patent Owner, Photoscribe has conceded that its machines

⁷ Even if Patent Owner had established a nexus between the claimed invention and the alleged commercial success, we find that Patent Owner has not provided sufficient information for us to conclude that the 1996 License was in fact commercially successful. As evidence of commercial success, Patent Owner relies on the number of inscriptions GIA performed pursuant to the license and the resulting royalties. PO Resp. 54. Patent Owner, however, provides an insufficient indication as to whether this represents a substantial quantity in this market. *See In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996).

meet all limitations of the asserted claims except for the “controlling” limitations. *Id.* at 56. Patent Owner contends that the Photoscribe machines do practice the “controlling” limitations because they “use an overlay technique nearly identical to that disclosed in the ’351 patent,” and therefore combine marking instructions with electronic image information to generate a marking. *Id.* at 56–57 (emphasis omitted).

Petitioner argues that Patent Owner’s allegations of copying and the filing of a lawsuit do not constitute evidence of copying. Reply 24–25.

We are not persuaded by Patent Owner’s showing regarding copying. “Not every competing product that arguably falls within the scope of a patent is evidence of copying; otherwise, ‘every infringement suit would automatically confirm the nonobviousness of the patent.’” *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010) (quoting *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2004)). To establish copying, a party must provide evidence of efforts to replicate a specific product, “which may be demonstrated through internal company documents, direct evidence such as disassembling a patented prototype, photographing its features, and using the photograph as a blueprint to build a replica, or access to the patented product combined with substantial similarity to the patented product.” *Id.* Patent Owner fails to provide credible evidence on this point.

Thus, we find that Patent Owner has not established by a preponderance of evidence that others have copied the claimed invention of the ’351 patent.

5. Claims 1 and 7 as Obvious under 35 U.S.C. § 103 in view of Fine Diamonds

Petitioner argues that, even under a construction of the “controlling” limitations that requires electronic image information to be fed back from the imaging step or system and combined with marking instructions to generate a marking on the gemstone, claims 1 and 7 are unpatentable as obvious in view of Fine Diamonds. Reply 12–15; Pet. 5, n.1, 59–60.

We need not reach this issue in view of our determination that Petitioner has shown by a preponderance of evidence that claims 1 and 7 of the ’351 patent are unpatentable as obvious over Fine Diamonds and the ILR Article, and Gresser and the ILR Article, and that Patent Owner’s evidence regarding objective indicia of non-obviousness does not direct a finding of non-obviousness.

III. PETITIONER’S MOTION TO EXCLUDE EVIDENCE

Petitioner filed a Motion to Exclude Evidence (Paper 26) in which Petitioner seeks to exclude several paragraphs from the Declaration of Dr. Bokor (Ex. 2005) and the Declaration of Necip Alev (Ex. 2006). Paper 26, 3–6. Petitioner also seeks to exclude the Transcripts of the Depositions of Dr. Christensen and documents referred to in these depositions (Exs. 2011–2020). *Id.* at 6–10. Additionally, Petitioner seeks to exclude the Declaration of Mr. Moryto (Ex. 2007 (redacted), 2008 (unredacted)), as well as Exhibits 2004, 2010, 2021, 2022, and 2024–2033. *Id.* at 10–13.

We do not reach the merits of Petitioner’s Motion to Exclude because, as explained above, even if the disputed evidence is considered, Petitioner has shown by a preponderance of evidence that claims 1 and 7 are

unpatentable as obvious, and Patent Owner has not shown that the evidence of secondary considerations of nonobviousness it submitted outweighs the strong evidence of obviousness presented by Petitioner. Accordingly, Petitioner's Motion to Exclude is dismissed as moot.

IV. MOTION TO SEAL

Patent Owner filed an unopposed Motion to Seal Exhibits 2008 and 2023 pursuant to 37 C.F.R. § 42.14 and 42.54. Paper 13. In its motion, Patent Owner asserts that the exhibits contain licensing information that is confidential to GIA, who is not involved in this proceeding. Paper 13, 2. Petitioner filed an unopposed Motion to Seal Exhibit 1021, which contains deposition testimony also relating to confidential GIA licensing information. Paper 25, 1–2. Exhibit 2007, filed by Patent Owner, is a redacted version of Exhibit 2008, and Exhibit 1020, filed by Petitioner, is a redacted version of Exhibit 1021. Patent Owner indicated that it was not able to file a redacted version of Exhibit 2023, which contains “raw data regarding the number of laser inscriptions performed by GIA pursuant to licensing agreements for laser inscription technology between [Patent Owner] and GIA.” Paper 13, 3.

Upon review, good cause exists to seal the above information as set forth in the above motions. We note that none of the sealed information was relied upon or disclosed in this Decision.

V. CONCLUSION

For the foregoing reasons, we determine that Petitioner has shown by a preponderance of the evidence that:

- (1) Fine Diamonds and the ILR Article render claims 1 and 7 of the '351 patent unpatentable as obvious; and
- (2) Gresser and the ILR Article render claims 1 and 7 of the '351 patent unpatentable as obvious.

VI. ORDER

For the reasons given, it is

ORDERED that claims 1 and 7 have been shown to be unpatentable;

FURTHER ORDERED that Petitioner's Motion to Exclude Evidence is *dismissed as moot*;

FURTHER ORDERED that Patent Owner's Motion to Seal is *granted*;

FURTHER ORDERED that Petitioner's Motion to Seal is *granted*;
and

FURTHER ORDERED that, because this is a final decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2015-00024
Patent 6,476,351 B1

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