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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* LOUIS M. SPOTO, DEAN J. RANDAZZO, and  
MATTHEW J. DESCHNER

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Appeal 2018-007891  
Application 14/157,500  
Technology Center 2800

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Before ST. JOHN COURTENAY III, KEVIN F. TURNER, and  
MATTHEW J. McNEILL, *Administrative Patent Judges*.

COURTENAY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant<sup>1</sup> appeals under 35 U.S.C. § 134(a) from a Final rejection of claims 1, 4–6, and 20, and 21. Claims 2, 3, 7–19, and 22–24 are canceled. We have jurisdiction over the pending claims under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). According to Appellant, the real party in interest is Illinois Tool Works Inc. *See* Appeal Br. 3.

STATEMENT OF THE CASE <sup>2</sup>

*Introduction*

Appellant’s claimed invention is “directed to an embossing shim and a method of producing embossing shims.” Spec. ¶ 2.

*Representative Independent Claim 1*

1. A method of making an enhanced optical interference pattern for an embossing shim, the method comprising:

directing three light beams from a coherent light source onto a photodefinable surface in a single exposure, each light beam emitted from a location corresponding to a respective vertex of a triangle, the locations positioned relative to one another such that a phase angle of one light beam is different than a phase angle of the other light beams and each light beam interferes with each of the other light beams to form *an optical interference pattern that produces asymmetrical visual effects*, each of the light beams directed onto the photodefinable surface from one side of the photodefinable surface to interfere with each of the other light beams to form the optical interference pattern;

mapping the optical interference pattern onto an entirety of the photodefinable surface by interference of the three beams in the single exposure, wherein the optical interference pattern is a diffraction cross-grating across the entirety of the photodefinable surface produced by the single exposure to the three beams; and

producing the embossing shim from the photodefinable surface.

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<sup>2</sup> We herein refer to the Final Office Action, mailed Sept. 26, 2017 (“Final Act.”); Appeal Brief, filed Apr. 5, 2018 (“Appeal Br.”); the Examiner’s Answer, mailed May 31, 2018 (“Ans.”), and the Reply Brief, filed July 31, 2018 (“Reply Br.”).

Appeal Br. 14, “CLAIMS APPENDIX.” (Emphasis added regarding the disputed dispositive limitation under 35 U.S.C. § 103(a)).

*Rejection*

Claims 1, 4–6, 20, and 21 are rejected under pre-AIA 35 U.S.C. § 103(a) as being obvious over the combined teachings and suggestions of Cowan, James J., “The Recording and Large Scale Replication of Crossed Holographic Grating Arrays using Multiple Beam Interferometry,” (“Cowan #1”) in view of Cowan et al. (US 6,608,722, B2, issued Aug. 19, 2003) (“Cowan #2”). *See* Final Act. 3.

*Principal Issue on Appeal*

***Issue:*** Is the disputed limitation (“each light beam interferes with each of the other light beams to form *an optical interference pattern that produces asymmetrical visual effects*”) taught or suggested by the cited combination of Cowan #1 and Cowan #2, within the meaning of independent claim 1, as rejected by the Examiner?<sup>3</sup> (Emphasis added).

ANALYSIS

*Rejection of Independent Claim 1 under 35 U.S.C. § 103(a)*

Appellant contends:

Even if the saw tooth structure in Cowan #2 could be considered sufficient for producing *asymmetrical visual effects*, in combination with the photoresist layer, Cowan #2 still fails to disclose the features recited in claim 1. For example, in claim 1, the *asymmetrical visual effects* are produced by an

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<sup>3</sup> We give the contested claim limitations the broadest reasonable interpretation (BRI) consistent with the Specification. *See In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

optical interference pattern. That is, the *asymmetrical visual effects are attributed to the optical interference pattern formed.* (Emphasis added).

Appeal Br. 8 (emphasis added).

Appellant additionally contends that the Examiner failed to provide an articulated reasoning having a rational underpinning to support the obviousness rejection. In support, Appellant urges:

Cowan #1 is not concerned with diffusers, the manufacture of diffusers, or the efficiency of diffusers .... Accordingly, the disclosure of Cowan #1 relates to the formation of such a pattern using a single, three-beam exposure. *Cowan #1 does not disclose a diffuser, and thus, does not disclose a diffuser which may be modified to have improved efficiencies* based on the disclosure of Cowan #2, as proposed by the Examiner. (Emphasis added).

Appeal Br. 11 (emphasis added).

#### *Claim Construction*

As an initial matter of claim construction, we turn to the Specification for *context*, and find no explicit definition for the recited claim 1 term “asymmetrical visual effects.” Instead, we find only a description of a non-limiting, exemplary embodiment:

For example, the phase angle of the beams may be changed to achieve different diffraction patterns. Also the phase angle can be changed between two of the three beams *to achieve asymmetrical visual effects.*

Spec. ¶ 31 (emphasis added).

We do not find the Specification describes any *specific* structural differences imparted by the formed “optical interference pattern” as a result of “directing three light beams from a coherent light source onto a

photodefinable surface in a single exposure . . . .” Claim 1; *see also* Spec. ¶ 31. Although the exposed “photodefinable surface” is positively recited as being used to produce “the embossing shim from the photodefinable surface” (claim 1, last step), no details are provided in claim 1 that explain exactly how this is done.

Dependent claims 4 and 6 further inform our analysis: “the photodefinable surface is a photoresist surface” (claim 4), and, “the photodefinable surface is electroplated to form a metal master shim” (claim 6). Under the doctrine of claim differentiation, there is a legal presumption that these additional limitations are *not present* in claim 1, from which claims 4 and 6 directly depend.<sup>4</sup>

As an additional matter of claim construction, we conclude the claim 1 language “each light beam interferes with each of the other light beams **to form an optical interference pattern** that produces *asymmetrical visual effects*” is a statement of intended use or purpose. (Emphasis added). Our reviewing court provides applicable guidance: “An intended use or purpose usually will not limit the scope of the claim because such statements usually do no more than define a context in which the invention operates.” *Boehringer Ingelheim Vetmedica, Inc. v. Schering-Plough Corp.*, 320 F.3d 1339, 1345 (Fed. Cir. 2003). Although “[s]uch statements often . . . appear

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<sup>4</sup> *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314–15 (Fed. Cir. 2005) (en banc) (“Differences among claims can also be a useful guide in understanding the meaning of particular claim terms. For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.”) (Citations omitted); *see also Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1054–55 (Fed. Cir. 1988).

in the claim’s preamble,” *In re Stencel*, 828 F.2d 751, 754 (Fed. Cir. 1987), a statement of intended use or purpose can appear elsewhere in a claim. *Id.*

Although the recited “method of making an enhanced optical interference pattern for an embossing shim” (preamble claim 1) was not drafted in literal product-by-process dependent claim form (e.g., as “a product made by the process of claim 1”), we note the last recited step of claim 1 recites language that essentially realizes a similar result: “producing the **embossing shim** from the photodefinable surface” (that was exposed according to the method of claim 1). (emphasis added).

Thus, the “embossing shim” (product) that is produced by the steps of method claim 1 is a *product that is defined by the process steps by which it is made*, in a manner analogous to a product-by-process claim.<sup>5</sup> *See e.g.*, Spec. Fig. 4 and ¶ 31.<sup>6</sup> In this regard, we find the Cowan #1 description of

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<sup>5</sup> *Cf.* MPEP § 2113(I): “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.” “The patentability of a product does not depend on its method of production . . . If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 697 (Fed. Cir. 1985)) (citations omitted). *Accord Amgen Inc. v. F. Hoffman-La Roche Ltd*, 580 F.3d 1340, 1369 (Fed. Cir. 2009) (en banc) (“In determining validity of a product-by-process claim, the focus is on the product and not on the process of making it.” (Citing *Atl. Thermoplastics Co. v. Faytex Corp.*, 970 F.2d 834, 841 (Fed. Cir. 1992).)

<sup>6</sup> Paragraph 31 describes a “first embodiment [that is] shown in FIG. 4 [which] manipulates three beams, 432, 434, 436 in such a way as to create three (3) large, relatively low energy spots on a large glass plate 38 which is covered with a thin photosensitive emulsion (“photoresist”). The three

“[a] nickel master [that] is made from the original photoresist by electroplating [that is] used to repeatedly emboss the pattern into long plastic sheets” teaches or suggests the claimed “embossing shim” *product* that is made by the method of claim 1. Cowan #1, Abstract.

In reviewing the record, we note the Examiner found that Cowan #1 does not expressly teach “an optical interference pattern that produces asymmetrical visual effects.” Final Act. 4. To remedy this deficiency, the Examiner relies upon Cowan #2 (Figure 2D and col. 6, ll. 27–45) which depicts and describes a modified sawtooth structure with holographically-produced parabolic surface patterns. *See Final Act. 4.*

The Examiner notes the lack of an explicit definition in the Specification for the claim term “asymmetrical visual effects.” *See* Ans. 2–3. We emphasize that because “applicants may amend claims to narrow their scope, a broad construction during prosecution creates no unfairness to the applicant or patentee.” *In re ICON Health and Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007) (citation omitted).

The Examiner thus relies upon Cowan #2’s unevenly-shaped blazed diffuser structure (Figure 2D), that has both the sawtooth shape and the additional hexagonal (honeycomb) patterns, to teach or suggest the “asymmetrical visual effects” when light is reflected therefrom. *See* Final Act. 4.

Upon a close reading of the cited references, we find a preponderance of the evidence supports the Examiner underlying factual findings and

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beams 432, 434, 436 interfere with one another, depending on the angles of incidence, to form a different diffraction grating pattern 430 on the photosensitive emulsion of the plate 438.” (Emphasis added).

ultimate legal conclusion of obviousness. We note the “asymmetrical visual effects” are formed by “an optical interference pattern,” as recited in claim 1.

Moreover, we find Cowan #2 creates one or more reflected “asymmetrical visual effects” using a diffuser in a manner at least suggestive of the other steps of Appellant’s claimed method:

A second step, which adds the diffusion, or second component, may be added, for example in the following way. After appropriately coating the periodic sawtooth structure with a 40 photoresist layer, the diffusing structure may be created by exposure to appropriate optical patterns and suitable processing of the photoresist thereafter. These optical patterns may be generated as an interference pattern of a number of coherent beams (the sine wave for example), the three-beam 45 honeycomb pattern as described above, or as a result of scanning the photoresist surface with a focused intensity modulated light beam (as with a laser).

Cowan #2, col. 6, ll. 36–47.

At a minimum, we find Cowan #2 teaches or at least suggests the claimed “asymmetrical visual effects” recited in claim 1, particularly given the breadth of the claim term, which we conclude encompasses *any* visual effect that is asymmetrical. Buttressing the Examiner’s findings, *see also* Cowan #2, at col. 11, ll. 4–8: “in some applications it may be desirable to achieve *non-uniform scattering*. One can modify the processes to create blazed diffusers that have *a wide range of scattering properties*.”

Given this evidence, we find *non-uniform scattering* (*id.*) teaches or suggests the “asymmetrical visual effects” recited in claim 1. The asymmetrical visual effects produced by the diffuser in Cowan #2 result from both the specific structure of the blazed diffuser, which can have varied

visual appearances when viewed microscopically from different angles, as well as from various designed light scattering properties.<sup>7</sup>

*Combinability of Cowan #1 and Cowan #2*

Appellant further contends the cited references have been improperly combined by the Examiner:

the Examiner takes the position that “[i]t would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the method of Cowan # 1 by creating the asymmetrical sawtooth pattern as taught by Cowan #2 in order to create a holographic blazed diffuser that has improved efficiencies compared to prior art diffusers.” See, Final Official Action, page 4. However, the Examiner’s rationale is insufficient to explain how or why an ordinarily skilled artisan would have sought to modify Cowan #1 to create a diffuser or how or why an ordinarily skilled artisan would have fanned a optical pattern generated as an interference pattern directly in the periodic sawtooth structure of Cowan #2, as opposed to the second structure 5. As such, the Examiner has failed to provide the articulated reasoning with some rational underpinning required to support a prima facie case of obviousness.

Reply Br. 6.

We note our reviewing court guides that obviousness does not depend on “whether the features of a secondary reference may be bodily

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<sup>7</sup> Our reviewing court emphasizes that “the question under 35 USC 103 is not merely what the references expressly teach but what they would have *suggested* to one of ordinary skill in the art at the time the invention was made.” *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (emphasis added) (quoting *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976)); *see also* MPEP § 2123.

incorporated into the structure of the primary reference.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). Moreover, for a prima facie case of obviousness, the reference need not recognize the same problem solved by the Appellant (*In re Kemps*, 97 F.3d 1427, 1430 (Fed. Cir. 1996)), because “neither the particular motivation nor the avowed purpose” of the [Appellant] controls” in an obviousness analysis. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007).

Here, the Examiner only relies upon Cowin #2 for a teaching or suggestion of the claimed “asymmetrical visual effects.” *See* Final Act. 4. Moreover, Appellant provides no persuasive evidence that combining the teachings of Cowan #1 with the diffused *non-uniform scattering* of light taught by Cowan #2 (i.e., “asymmetrical visual effects”) would have realized more than a predictable result.

“[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)).

#### *Hindsight*

Appellant additionally contends the Examiner has engaged in impermissible hindsight reasoning. Reply Br. 11.

Although we are fully aware that hindsight bias often plagues determinations of obviousness, *Graham v. John Deere Co. of Kansas City*, (383 U.S. 1, 36 (1966)), we are also mindful that the Supreme Court has clearly stated that the “combination of familiar elements according to known

methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 550 U.S. at 401 (citation omitted).

Here, Appellant has not identified knowledge gleaned only from the present application that was not within the level of ordinary skill at the time the claimed invention was made. *See In re McLaughlin*, 443 F.2d 1392 (CCPA 1971). Moreover, Appellant has not provided any objective evidence of secondary considerations (e.g., unexpected results) which our reviewing court guides “operates as a beneficial check on hindsight.” *Cheese Systems, Inc. v. Tetra Pak Cheese and Powder Systems, Inc.*, 725 F.3d 1341, 1352 (Fed. Cir. 2013).

Therefore, on this record, and based upon a preponderance of the evidence, we are not persuaded of error regarding the Examiner’s underlying factual findings and ultimate legal conclusion of obviousness regarding the Examiner’s rejection of independent representative claim 1.

Accordingly, we sustain the Examiner’s obviousness rejection of independent representative claim 1. For the same reasons, we also sustain the Examiner’s obviousness rejection of the remaining grouped dependent claims 4–6, 20, and 21 (not argued separately), which fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

## CONCLUSION

The Examiner did not err in rejecting claims 1, 4–6, 20, and 21, as being obvious under pre-AIA 35 U.S.C. § 103(a), over the combined teachings and suggestions of the cited references.

DECISION SUMMARY

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1, 4–6, 20, 21	103(a)	Cowan #1, Cowan #2	1, 4–6, 20, 21	

FINALITY AND RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv). *See* 37 C.F.R. § 41.50(f).

AFFIRMED