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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* WOUTER ANTHON SOER,  
MAARTEN MARINUS JOHANNES WILHELMUS VAN  
HERPEN, and MARTIN JACOBUS JOHAN JAK

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Appeal 2015-004800  
Application 13/060,901  
Technology Center 2800

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Before: CHUNG K. PAK, JULIA HEANEY, and LILAN REN,  
*Administrative Patent Judges.*

REN, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants<sup>1</sup> appeal under 35 U.S.C. § 134(a) from a Final Rejection of claims 1, 2, and 4–15.<sup>2</sup> We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> The ASML Netherlands B.V. is identified as the real party in interest. (Appeal Brief, filed September 8, 2014 (“App. Br.”), 2.)

<sup>2</sup> Final Rejection mailed January 7, 2014 (“Final Act.”)

### CLAIMED SUBJECT MATTER

The claims are directed to a spectral purity filter which may be included in a lithographic apparatus. The spectral purity filter may remove harmful radiation at various wavelengths. (*See Spec. ¶ 4.*)<sup>3</sup> Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A spectral purity filter comprising a body of material and an aperture in the body of material, the *spectral purity filter* being configured to enhance the spectral purity of a radiation beam by *being configured to absorb radiation of a first wavelength larger than about twice the diameter of the aperture* and to allow at least a portion of radiation of a second wavelength to transmit through the aperture, the first wavelength being larger than the second wavelength.

(Claim Appendix, App. Br. 9 (emphases added).)

### REFERENCES

The prior art references relied upon by the Examiner in rejecting the claims on appeal are:

Klunder	US 2006/0146413 A1	July 6, 2006
Banine	US 7,372,623 B2	May 13, 2008

### REJECTIONS

Claims 1, 2 and 4–15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Klunder in view of Banine. (Final Act. 2.)

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<sup>3</sup> Application 13/060,901, *Spectral Purity Filter, Lithographic Apparatus Including Such A Spectral Purity Filter And Device Manufacturing Method*, filed February 25, 2011. We refer to the “’901 Specification,” which we cite as “Spec.”

OPINION

Findings of fact throughout this Opinion are supported by a preponderance of the evidence of record.

In rejecting claim 1, the Examiner finds that Klunder discloses a spectral purity filter used to “reflect light with wavelengths larger than about twice the diameter of [an] aperture” but acknowledges that Klunder does not disclose a spectral purity filter “being configured to absorb radiation of a first wavelength larger than about twice the diameter of the aperture” as recited. (Final Act. 2–3 (citing Klunder ¶ 12).)

The Examiner therefore turns to Banine which discloses a spectral filter capable of “reflecting or absorbing undesired radiation [which may have wavelengths larger or smaller than the desired radiation or the radiation beam.]” (Final Act. 3 (citing Banine 2:12–30).) Based on the interchangeability of using reflecting and absorbing materials in the form of apertures as a filtering material for removing undesired radiation, inclusive of light with wavelengths larger than about twice the diameter of an aperture (transmitting at least 50 or 90% EUV radiation while filtering, e.g., DUV radiation), the Examiner concludes that a skilled artisan would have “incorporate[d] the radiation absorbing material of Banine in the spectral purity filter of Klunder in order to avoid undesired stray light and improve the result of filtering the radiation.” (Final Act. 3–4; *see also* Klunder ¶¶ 14–20 and Banine, col. 2, ll. 13–35 and col. 3, ll. 4–22)

Appellants do not dispute the prior art teachings but contend that the Examiner erred because neither reference discloses every limitation of claim 1. (App. Br. 5; *see also* Reply 2 (“Neither Klunder nor Banine teaches a spectral purity filter that is configured to absorb radiation of a first

Appeal 2015-004800  
Application 13/060,901

wavelength larger than about twice the diameter of the aperture, as recited by claim 1.”.)<sup>4</sup>

Unlike anticipation, which “requires that all of the claim elements and their limitations are shown in a single prior art reference,” *In re Skvorecz*, 580 F.3d 1262, 1266 (Fed. Cir. 2009), obviousness is analyzed based on what was known to have been within the knowledge and abilities of one of ordinary skill in view of the collective teachings of the references. “Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references.” *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Appellants’ argument, directed to the individual – rather than the combined – prior teachings, does not identify error in the Examiner’s findings.

Appellants next argue that a skilled artisan would not have combined the prior art teachings because there lacks a motivation to “turn Klunder’s body of material into a material that absorbs radiation while keeping the same sized apertures” as the apertures in Banine are larger than those in Klunder. (App. Br. 5, 6.)

All of the features of the secondary reference need not be bodily incorporated into the primary reference and the skilled artisan is not compelled to blindly follow the teaching of one prior art reference over the other without the exercise of independent judgment. *See Lear Siegler, Inc. v. Aeroquip Corp.*, 733 F.2d 881, 889 (Fed. Cir. 1984). In this case, it is undisputed that both prior art references teach a spectral purity filter used to improve the spectral purity of a radiation beam. (*Compare* Ans. 3–4 with App. Br. 4–7.) It is also undisputed that the light absorbing material taught

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<sup>4</sup> Reply Brief filed March 25, 2015 (“Reply”).

Appeal 2015-004800  
Application 13/060,901

by Banine can be used in the form of apertures (mesh structure) as a filtering material for removing undesired radiation, inclusive of light with wavelengths larger than about twice the diameter of the aperture (DUV radiation) while transmitting EUV radiation. (*Compare* Ans. 3–4 with App. Br. 4–7.) On this record, Appellants do not explain why the size difference (if any) between the prior art apertures shows patentability of claim 1 – which does not recite a size of the aperture. (App. Br. 4–7.) Banine, like the filter recited in claim 1, requires configuring the light absorbing material in the form of apertures to remove undesired radiation, e.g., DUV radiation. (*Compare* Banine 2:12–30 with claim 1 on appeal and Spec. ¶¶ 7–20.) No reversible error has therefore been identified in this aspect of the obviousness analysis. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (holding that the obviousness analysis “can take account of the inferences and creative steps that a person of ordinary skill in the art would employ”).

For the first time in the Reply Brief, Appellants raise the argument that the material used to reflect or absorb the undesired radiation taught in Banine does not have apertures but instead has a mesh structure. (Reply 2.) Appellants, however, press on with a seemingly contradictory statement that the mesh structure, in fact, has apertures which “are much larger than any wavelength radiation that would be absorbed by the spectral purity filter.” (*Id.* at 3; *see also* App. Br. 7 (stating that “the apertures of Banine” are larger than the apertures of Klunder).)

An argument raised for the first time in a Reply Brief is generally considered waived if Appellants do not explain why it could not have been raised previously. 37 C.F.R. § 41.41(b)(2) (2013); *see also Ex parte Nakashima*, 93 USPQ2d 1834 (BPAI 2010) (informative) (explaining that

Appeal 2015-004800  
Application 13/060,901

arguments and evidence not timely presented in the principal Brief will not be considered when filed in a Reply Brief, absent a showing of good cause explaining why the argument could not have been presented in the Principal Brief); *Ex parte Borden*, 93 USPQ2d 1473, 1477 (BPAI 2010) (informative) (“Properly interpreted, the Rules do not require the Board to take up a belated argument that has not been addressed by the Examiner, absent a showing of good cause.”).

Appellants here have not provided an explanation as to why the argument was not raised previously. In any case, all of the features of the secondary reference need not be bodily incorporated into the primary reference and a skilled artisan is not compelled to blindly follow the teaching of one prior art reference over the other without the exercise of independent judgment. *See Lear Siegler*, 733 F.2d at 889. Other than stating that the prior art spectral filters are not identical (i.e., having different structures), Appellants do not explain why these differences would have prevented a skilled artisan from combining the prior teachings in the manner discussed above. Appellants have not shown reversible error in the Examiner’s prima facie case of obviousness. *See KSR*, 550 U.S. at 418 (holding that the obviousness analysis “can take account of the inferences and creative steps that a person of ordinary skill in the art would employ”).

Appellants’ arguments for independent claims 14 and 15 repeat those for claim 1 which we have addressed *supra*. (*See* App. Br. 6–7.) Because Appellants make no distinct arguments beyond the arguments regarding claim 1, we affirm the rejections of claims 14 and 15 consistent with the provisions of 37 C.F.R. § 41.37(c)(1)(iv) (2013).

Appeal 2015-004800  
Application 13/060,901

DECISION

The Examiner's rejection of claims 1, 2, and 4–15 is affirmed.

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

AFFIRMED