

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GIESECKE+DEVRIENT GMBH, GIESECKE+DEVRIENT CURRENCY
TECHNOLOGY GMBH, AND PAPIERFABRIK LOUISENTHAL GMBH,
Petitioners,
v.
LUMENCO, LLC,
Patent Owner

**PATENT OWNER'S SUR-REPLY TO THE PETITION
FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 11,448,863**

Filed on behalf of Patent Owner by:

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EXHIBIT LIST

Exhibit	Description
2001.	Declaration Of Dr. Mikael Lindstrand *

* Previously submitted

I. INTRODUCTION

The parties dispute whether the asserted prior art renders obvious claim elements [1a], [7d], [12b], and dependent claim 3. Petitioner’s Reply largely reiterates the arguments made in its Petition and fails to meaningfully rebut the evidence presented in the POR and Dr. Lindstrand’s declaration. For those reasons and as detailed below, Petitioner has not met its burden of establishing by a preponderance of the evidence that any challenged claim of U.S. Patent No. 11,448,863 (the “’863 patent”) is unpatentable.

II. FUHSE847 AND RICH DO NOT RENDER OBVIOUS ELEMENT [1A]: “ASSIGNING A FIRST OBJECT IN A STARTING DIGITAL IMAGE TO A FIRST IMAGE DISPLAY PLANE AND A SECOND OBJECT IN THE STARTING DIGITAL IMAGE TO A SECOND IMAGE DISPLAY PLANE.”

For at least the reasons detailed in the POR, Fuhse847 in view of Rich fails to render obvious element [1a]. *See* POR, pp. 13-18. By its plain language, element [1a] requires assigning two different objects found *within the same starting digital image* to respective display planes. The specification confirms that understanding. ’863 patent, 9:64-10:1; 10:35-39, FIG. 6; 10:39-47.

The Petition provided two separate arguments attempting to show that Fuhse947 discloses the features of element [1a]. Both arguments fail.

First, the Petition argued that the “body” disclosed by Fuhse847 is both “the first object” (“Fuhse847 teaches ‘a body’ (**a first object**)”) and “the starting digital

image” (“[t]his body satisfies **a starting digital image**”) of element [1a]. Petition, p. 18 (emphasis in original). The Petition also contends that the “second object” was “satisfied by the same teachings above [i.e., the teachings Petitioner explained with respect to the first object].” Petition, p. 21. Thus, the Petition argued that the “body” of Fuhse847 is also the “second object.” But, as noted in the POR, Petitioner’s mapping of the same “body” to two different claim terms is improper because it ignores the presumption that different claim terms have different meanings. POR, p.15. Thus, Petitioner’s first argument fails to show that Fuhse847 discloses element [1a].

Petitioner’s Reply attempts to sidestep this problem and recast the Petition’s mapping. The Reply asserts that, in Petitioner’s mapping, the “body” of Fuhse847 is the claimed first object. Reply, p. 1. Then, in the very next paragraph, the Reply asserts that the “body” is also the “starting digital image,” yet now also argues that is true only “when the body is ‘provided in 3D-CAD,’ a ‘technical drawing,’ or ‘through 3D laser scanning.’” *Id.* at 2. But those options are merely examples of the file types that can, in Dr. Hesselink’s opinion, be used as the “body” of Fuhse847. Ex. 1003, ¶¶152-155. The fact that the “body” of Fuhse847 can be different types of files is irrelevant to the dispute about element [1a]. No matter what type of file the “body” is in any particular application, the critical point is that Fuhse847 does not disclose extracting two separate objects from the same “body.” In other words,

Petitioner still fails to point to any disclosure in either Fuhse847 or Rich of extracting two separate objects from a single starting digital image.

Second, the Petition presented a secondary argument that a POSITA “would have understood that the second image of Fuhse847 is from a second object in the starting digital image. Petition, p. 22. In support, the Petition cited pp. 5, 7, and 26 of Fuhse847. *Id.* Those citations do not support the argument—Fuhse847 merely says that a displayed image can include both a 3D part and a 2D part. Exhibit 1022, p. 7. In fact, the portion of Fuhse847 discussing that possibility relates to the final display of a light-spot image. *Id.* Those disclosures do not describe the “body” of Fuhse847, which is what Petitioner points to as the “starting digital image.” *Id.*

Moreover, the fact that a 3D-CAD file can include multiple objects in a single file does not remedy the deficiencies of Fuhse847. In other words, Fuhse847 does not teach extracting two separate objects from the same starting file and displaying them separately as required by element [1a]. Absent an explicit disclosure in Fuhse847, Petitioner must identify either (1) another reference that discloses extracting two separate objects from a single starting digital image and displaying those objects separately, or (2) a motivation to modify Fuhse847 to meet element [1a] and an explanation of *how* Fuhse847 could be modified to achieve the claimed feature. *See SIBIA Neurosciences, Inc. v. Cadus Pharm. Corp.*, 225 F.3d 1349, 1356 (Fed. Cir. 2000). Petitioner has done neither.

For at least these reasons, Petitioner failed to show by a preponderance of the evidence that Fushse847 in view of Rich teaches or suggest element [1a].

III. FUHSE847 AND RICH DO NOT RENDER OBVIOUS ELEMENT [12B]: “GENERATING A DESIGN OUTPUT FILE INCLUDING AN ANGULAR ORIENTATION AND LOCATION COORDINATES IN THE ARRAY FOR EACH OF THE MICRO MIRRORS.”

Patent Owner maintains its position that the combination of Fuhse847 and Rich does not render obvious element [12.b] for at least the reasons explained in the POR. *See* POR, 19-21. The Reply argues that Fuhse847 discloses determining an angular orientation for micromirrors and that Rich teaches a processor that executes code to provide an array design module. Reply, p. 7. Although not expressly stated, Petitioner appears to make the implicit argument that a POSITA would have modified the teachings of Fuhse847 such that the determination of angular orientations is made by the array design module of Rich. But that argument was not made in the Petition and the Reply also fails to expressly make that argument. Moreover, neither Petitioner nor Dr. Hesselink have identified, much less explained, any motivation for making such a modification. Nor have they explained how Fuhse847 would be so modified to achieve the result. On the record here, Petitioner has not met its burden to demonstrate a motivation to combine. *See Sanofi-Aventis Deutschland GmbH v. Mylan Pharms. Inc.*, 66 F.4th 1373, 1379 (Fed. Cir. 2023) (overturning obviousness determination because petitioner did not present a motivation to combine).

For at least these reasons, Petitioner fails to show by a preponderance of the evidence that Fushse847 in view of Rich teaches or suggests element [12b].

IV. FUHSE847, RICH, AND FUHSE925 DO NOT RENDER OBVIOUS CLAIM 3 OR ELEMENT [7D]: “WHEREIN EACH OF THE SETS OF MICRO MIRRORS ARE SELECTED RANDOMLY FROM A PLURALITY OF THE MICRO MIRRORS LOCATED IN A BASE OF A CONE ON A SURFACE CONTAINING THE ARRAY OF MICRO MIRRORS.”

In its Decision Instituting *Inter Partes* Review of the ’863 patent, the panel noted that it was “not persuaded that the combination of Fuhse847, Rich, and Fuhse925 teaches the additional limitation of claim 3.” *See* Paper 8, p. 24. That remains the correct conclusion.

While the arguments in Petitioner’s Reply are difficult to follow, one thing is clear—Petitioner has presented no evidence (in the Reply or elsewhere) that can cure the fundamental deficiencies in Petitioner’s proposed combination. For example, Petitioner argues that Fuhse847 in view of Fuhse925 “teach[es] all elements.” Reply, p. 11. Patent Owner does not dispute that, as the Reply states, Fuhse925 teaches varying the *angle* of micro-mirrors according to random distribution. *Id.*, p. 12 (citing Ex. 1008, 11:14-27). The problem arises in the Reply’s next argument, that “such randomness of the non-vanishing component $N_{||}$ would result in the randomly selected pattern of the micro-mirrors.” *Id.*, pp. 12-13 (citing Ex. 1003, ¶¶340-42). Neither Petitioner nor Dr. Hesselink explain what “randomly selected

pattern” they refer to. And, regardless, the claim element does not actually recite a “randomly selected pattern.”

The Reply also argues, “[w]hile a POSITA would have understood that Fuhse847 discloses orienting the mirror surface in the x and y axes to achieve the normal vector n , a POSITA would have looked to Fuhse925 for how the vector “is chosen independently” and “varies randomly or pseudorandomly.” Reply, p. 13 (citations omitted). But Petitioner again fails to explain why randomly altering the normal vector of a mirror surface teaches or suggests randomly selecting mirrors for inclusion in a group of mirrors as required by claim 3 and element [7d].

The reality is that Petitioner does not identify a motivation to combine Fuhse847 and Fuhse925, does not provide an explanation for how the combination would be achieved, and does not explain how the combination would arrive at the features of claim 3 and element [7d]. Dr. Hesselink’s declaration adds nothing to the analysis because it merely repeats, verbatim, the conclusory and unsupported argument in the Petition. *Compare* Petition, pp. 58-60 *with* Ex. 1003, ¶¶338-342. The Board should disregard Dr. Hesselink’s declaration for that reason. *See* 37 C.F.R. § 42.65(a).

For at least these reasons, Petitioner has failed to show by a preponderance of the evidence that Fuhse847, Rich, and Fuhse925 teach or suggest claim 3 or element [7d].

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), I hereby certify that the foregoing Patent Owner's Sur-Reply contains 1454 words as measured by the word processing software used to prepare the document, excluding the cover page, signature block, and portions exempted under 37 C.F.R. § 42.24(a) or (b).

DATED: June 26, 2025

Respectfully submitted,

By: /C. Matthew Rozier/

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6, the undersigned certifies that June 26, 2025, the foregoing document was served on counsel of record for Petitioners by filing this document through the End-to-End System, as well as *via* electronic mail to counsel of record for Petitioners at the following address:

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