

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.

IPR2024-00837
Patent 10,317,691 B2

Before MEREDITH C. PETRAVICK, BENJAMIN D. M. WOOD, and
NABEEL U. KHAN, *Administrative Patent Judges*.

WOOD, Administrative Patent Judge.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. *Background*

Giesecke+Devrient GmbH, Giesecke+Devrient Currency Technology GmbH, and Papierfabrik Louisenthal GmbH (collectively, “Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1, 3–7, and 9–13 of U.S. Patent No. 10,317,691 B2 (Ex. 1001, “the ’691 patent”). Lumenco, LLC (“Patent Owner”) filed a preliminary response. Paper 7 (“Prelim. Resp.”).

We have authority under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). Upon considering the Petition, we determine that Petitioner has not satisfied this threshold requirement, and therefore we do not institute *inter partes* review of claims 1, 3–7, and 9–13 of the ’691 patent.

B. *Real Parties-in-Interest*

Petitioner identifies the following as real parties-in-interest: Giesecke+Devrient GmbH, Giesecke+Devrient Currency Technology GmbH, and Papierfabrik Louisenthal GmbH. Pet. 75.

Patent Owner identifies itself as real party-in-interest. Paper 5, 2.

C. *Related Proceedings*

The parties identify *Lumenco, LLC v. Giesecke+Devrient GmbH*, No. 2:23-cv-00100 (E.D. Tex.) and *Lumenco, LLC v. United States*, No. 1:24-cv-00139 (Fed. Cl.) as related matters. Pet. 75; Paper 5, 2.

D. The '691 Patent

The '691 patent¹ relates to a “visual display assembly useful as an authentication or anti-counterfeiting element” that can be placed on, e.g., currency or products. Ex. 1001, code (57), 2:55–57. The assembly or security device uses reflected ambient light to display an image that appears to float above the device. *Id.* code (57), 2:37–39. The security device includes a substrate and, on a surface of the substrate, an array of micro mirrors receiving and reflecting ambient light. *Id.*, code (57). “Each of the micro mirrors is oriented (or ‘programmed’) to act with a number of other such micro mirrors (e.g., a ‘set of pixel-providing micro mirrors’) to write or produce one pixel in the written image(s).” *Id.* at 2:40–43. Each micro mirror in the set directs its reflected light to the same point on the display plane (the pixel location); that location can be considered an apex of a cone, with each of the micro mirrors in the set located within the base of the cone. *Id.* at 2:43–47. The resulting pixel, when viewed with a number of other such pixels (each provided by a different set of pixel-providing micro mirrors) makes up a written image in one or more spaced-apart image display planes. *Id.* at 2:48–51.

Figure 4 of the '691 patent, reproduced below, is a side view of a security element that provides a two-layer or two-level image:

¹ The '691 patent issued on June 11, 2019 from an application filed October May 8, 2017, which is a continuation-in-part of an application filed May 23, 2016. Ex. 1001, codes (45), (22), (63), (60).

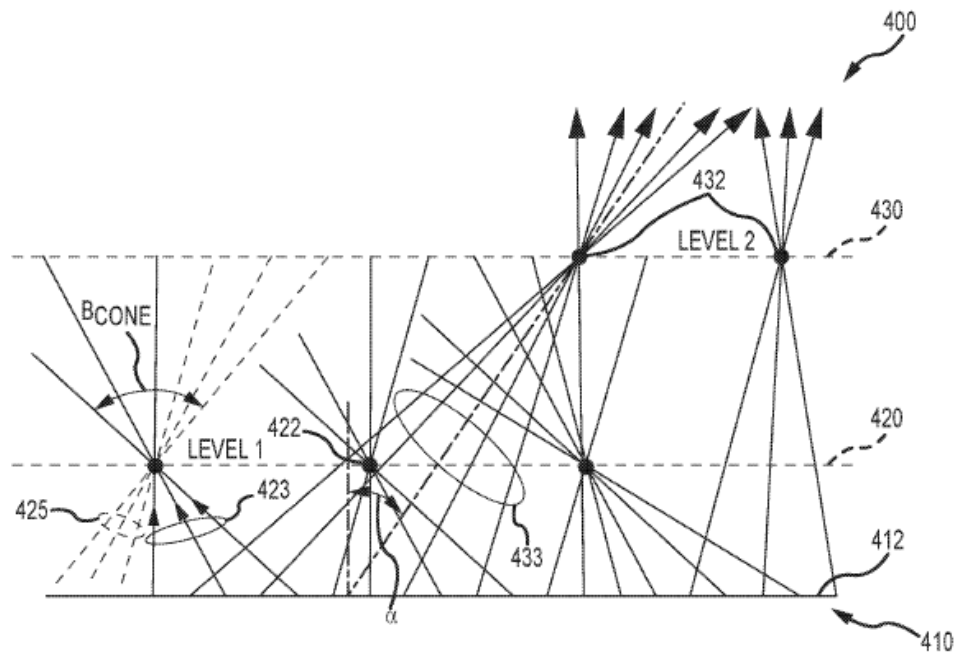


FIG. 4

As shown in Figure 4, security element 410 comprises micro mirror array 410 made up of thousands of micro mirrors (e.g., 50 micron diameter mirrored surfaces). Ex. 1001, 10:7–12. As shown with arrows 423, three sets of micro mirrors in array 412 are oriented so that each reflects ambient light to intersect at one of three display pixels 422 located in a first plane 420 above the security element. *Id.* at 10:12–18. Two other sets of pixels in array 412 are oriented to display pixels 432 in a second plane 430 spaced apart from level 420. *Id.* at 10:26–29.

The reflected beams of each set of micro mirrors fall within a “cone angle” β_{cone} , as shown in Figure 4. *Id.* at 10:18–19. Each cone has a “cone axis” defined as a line that passes from the pixel/cone apex to the center point of the cone base. *Id.* at 22:36–38, 54–56, Figs. 16A, 16B. The cone axis may be offset from the perpendicular of the substrate on which the security element is placed; an offset angle may be defined as the angle between an axis orthogonal to the substrate and the cone axis. *See id.* at

23:60–62. “The pixels are displayed to the viewer at viewing angles that are offset by an angle (pixel offset angle)” in order to “offset the image in the plane/level 430 for the viewer . . . from the image in the plane/level 420.” *Id.* at 10:31–37; *see id.* at 24:11–13 (“A viewer would see each image/frame separately or with overlap when they properly position their eyes at a viewing angle corresponding to the cone angle offset.”).

E. The Challenged Claims

Petitioner challenges claims 1, 3–7, and 9–13 of the ’691 patent. Pet. 1. Claims 1, 6, and 12 are independent. Claim 1 is representative and is reproduced below:²

1. [1Pre] A visual display assembly useful as a security element on paper and coin currency and on product labels, comprising:

[1a] a substrate; and on a surface of the substrate, an array of micro mirrors receiving ambient light and,

[1b] in response, displaying a plurality of images in a plane spaced a distance apart from the surface of the substrate, wherein each of the images comprises a plurality of pixels,

[1c] wherein the array of micro mirrors includes, for each of the pixels of each of the images, a set of the micro mirrors each having a reflective surface oriented to reflect the ambient light toward a point on the plane corresponding to one of the pixels,

[1d] wherein each of the sets of the micro mirrors providing the pixels for each of the differing ones of the images has a differing cone angle offset, wherein the cone angle offset is defined based upon a relative position of a cone axis for a cone of rays projected by the sets of the micro mirrors through each of the pixels,

² We use Petitioners’ bracketed identifiers for each limitation. *See* Pet. 22–57, 78–81 (Claim Listing App.).

[1e] wherein the cone has a cone angle in the range of 10 to 45 degrees,

[1f] wherein the cone angle offsets are selected whereby the cones do not overlap at a predefined height above the substrate, whereby only one of the images is observable at a time by a viewer,

[1g] wherein each of the sets of the micro mirrors includes at least two of the micro mirrors,

[1h] wherein the reflected ambient light from the at least two of the micro mirrors intersects at the point corresponding to the one of the pixels,

[1i] wherein the point on the plane corresponds to an apex of a cone and the at least two of the micro mirrors are located within a base of the cone coplanar with the surface of the substrate, and

[1j] wherein each of the micro mirrors in each of the sets for the micro mirrors is selected randomly from available micro mirrors in the base of the cone coplanar with the surface of the substrate, whereby each of the sets of the micro mirrors is arranged in a random pattern.

Ex. 1001, 28:14–55.

F. Asserted Grounds of Unpatentability

Petitioner contends that the challenged claims are unpatentable based on the following specific grounds (Pet. 8):

Ground	Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1	1, 4–7, 10–12	103	Fuhse262, ³ Fuhse925 ⁴
2	1, 4–7, 10–12	103	Fuhse262, Fuhse926, Jordan ⁵
3	3, 9, 13	103	Fuhse262, Fuhse926, Fuhse172 ⁶
4	3, 9, 13	103	Fuhse262, Fuhse926, Jordan, Fuhse172

Petitioner also relies on the Declaration of Lambertus Hesselink, Ph.D. (Ex. 1003) to support its asserted grounds.

II. ANALYSIS

A. Legal Standards Used in the Merits Analysis

“In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C.

³ DE Patent App. Pub. No. 10 2010 048 262 A1 (published Apr. 12, 2012) (Ex. 1005). We cite to the English language translation, Exhibit 1006.

⁴ U.S. Patent No. 10,639,925 B2 (issued May 5, 2020, filed May 4, 2016) (Ex. 1008).

⁵ U.S. Patent App. Pub. No. 2014/0367957 A1 (published Dec. 18, 2014) (Ex. 1009).

⁶ U.S. Patent App. Pub. No. 2013/0093172 A1 (published Apr. 18, 2013) (Ex. 1035).

§ 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)); *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

Under 35 U.S.C. § 103:

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.

Obviousness is a question of law based on underlying findings of fact.

Graham v. John Deere Co., 383 U.S. 1, 17 (1966). The underlying factual considerations include the scope and content of the prior art, the differences between the prior art and the claimed invention, the level of ordinary skill in the art, and any relevant secondary considerations of non-obviousness, including commercial success of the patented product or method, a long-felt but unmet need for the functionality of the patented invention, and the failure of others who have unsuccessfully attempted to accomplish what the patentee has achieved. *Id.* at 17. The obviousness analysis should not be conducted “in a narrow, rigid manner,” but should instead focus on whether a claimed invention is merely “the result[] of ordinary innovation,” which is not entitled to patent protection. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406, 427–28 (2007).

B. Level of Ordinary Skill in the Art

Petitioner contends that, for the '691 patent, one of ordinary skill in the art “would have had a minimum of an undergraduate degree in electrical engineering, mechanical engineering, or physics and at least 2 years of experience in micro-optic based security features.” Pet. 14 (citing Ex. 1003 ¶¶ 12–13). Patent Owner responds that one of ordinary skill in the art “would have had an undergraduate degree in electrical engineering, mechanical engineering, physics, or a similar field and at least 2 years of experience in micro-optic based security features.” Prelim. Resp. 10.

We do not discern a meaningful difference between the parties' positions, and do not believe that our decision would differ under either definition. Nonetheless, at this stage of the proceeding, we adopt Petitioner's definition. We also presume that the cited prior art references reflect the level of ordinary skill at the time of the invention. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (explaining the level of ordinary skill in the art may be evidenced by the cited references themselves).

C. Claim Construction

We construe claim terms “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b)” 37 C.F.R. § 42.100(b). Under this standard, claim terms are generally given their plain and ordinary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). Any special definitions for claim terms must be set forth in the Specification “with reasonable

clarity, deliberateness, and precision.” *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

The parties agree that no terms require construction. Pet. 15; Prelim. Resp. 10. We also do not see the need to expressly construe any claim term, as the threshold question of institution can be decided without doing so. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (approving Board decision not to construe claim language where construction is not material to the dispute).

D. Ground 1: Obviousness of Claims 1, 4–7, and 10–12 over Fuhse262 and Fuhse925

Petitioner contends that claims 1, 4–7, and 10–12 would have been obvious over Fuhse262 and Fuhse925. Pet 15–60.

1. Fuhse262 (Ex. 1006)

Fuhse262 “relates to a depiction element having a substrate with a surface region in which a plurality of optical elements [e.g., micromirrors] are arranged.” Ex. 1006 ¶¶ 1, 13, 84. “The depiction element is designed and intended to produce, upon illumination, a light-spot image composed of a plurality of light spots, that for a viewer appear floating or below the surface region and that are arranged in the form of a specified motif.” *Id.* ¶ 10. A plurality of optical elements may be assigned to every light spot of an image; doing so allows the use of small flat micromirrors, which are easier to design and manufacture than, e.g., a single concave mirror for each light spot. *Id.* ¶¶ 16, 19, 20, 22, 83, 86, Fig. 2.

Figures 8(a) and 8(b), reproduced below, depict embodiments using flat, square micromirrors:

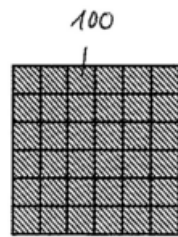


Fig. 8(a)

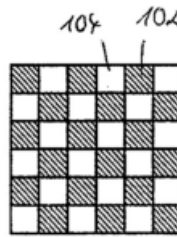
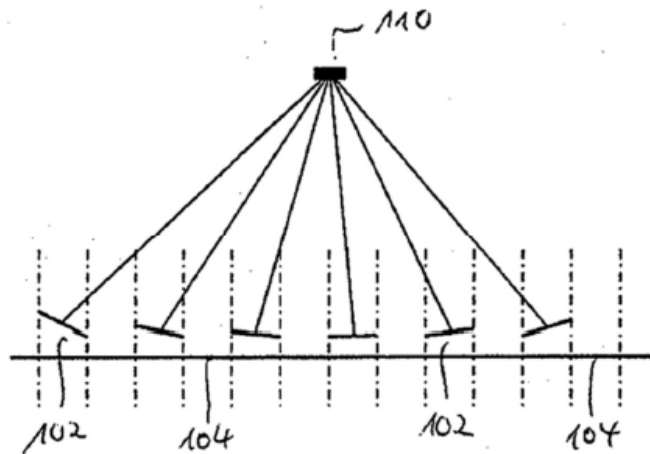
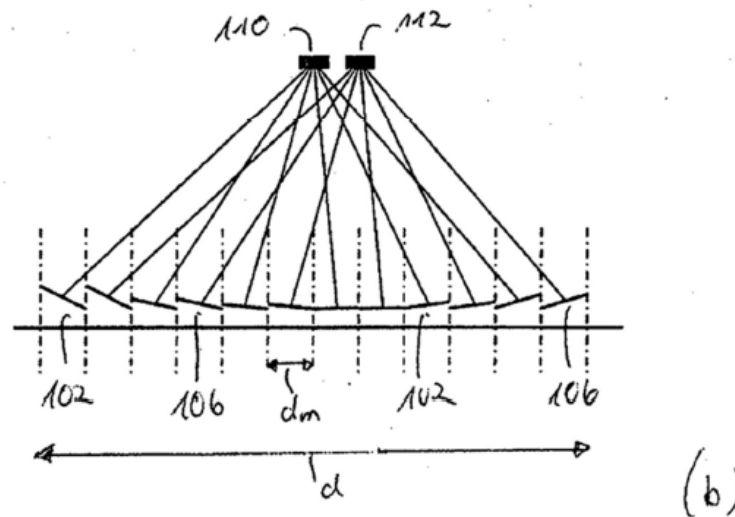


Fig. 8(b)

Figure 8(a) depicts an array of $n \times n$ micromirrors 100. Ex. 1006 ¶¶ 84, 87. Figure 8(b) depicts micromirrors 102 (dark squares) arranged in a checkerboard-like manner in the surface region of the security element, alternating with uncovered fields 104 (white squares). *Id.* ¶ 88. Mirrors 102 can be oriented to produce one light spot, and fields 104 can be filled with other micromirrors to produce a different light spot (*id.* ¶¶ 88, 90), as depicted in Figures 9(a) and 9(b), reproduced below:



(a)



Fuhse262, FIGS. 9(a), 9(b)

Figure 9(a) depicts micromirrors 102 oriented to reflect light to produce light spot 110. Ex. 1006 ¶ 91. Fields 104 are empty. In Figure 9(b), fields 104 are covered by mirrors 106, which are oriented to form light spot 112 spaced apart from light spot 110. *Id.* ¶ 92.

2. *Fuhse925 (Ex. 1008)*

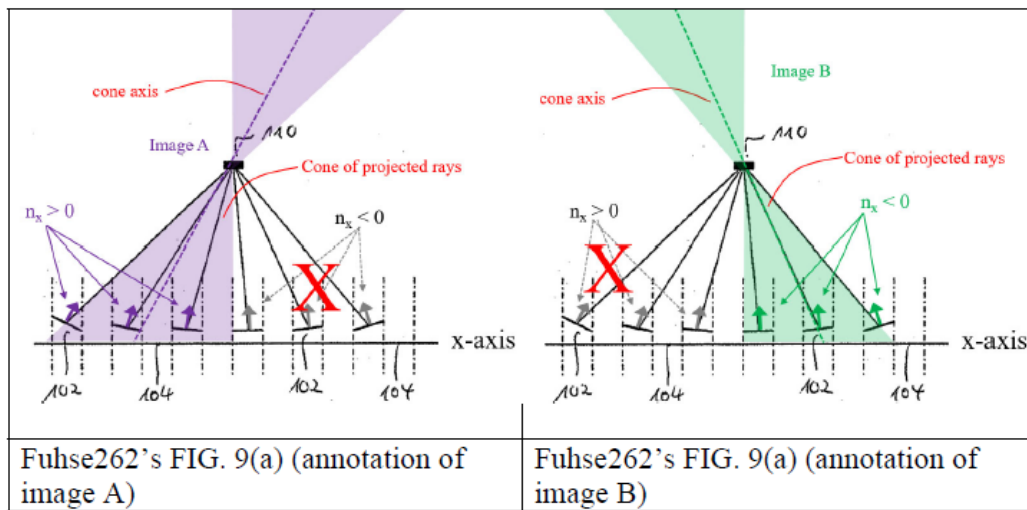
Fuhse925 is titled “Visually Variable Security Element,” and “relates to an optically variable security element for securing valuable articles.” Ex. 1008, code (54), 1:5–6. Fuhse925 discloses an optically variable security element in the form of a window security thread that emerges at certain window regions; the security thread reflects light to display a floating three-dimensional image when the security element is tilted. *Id.* at 6:49–55, 7:10–12, Figs. 1–3.

3. *Independent Claim 1*

Limitation [1d] recites “wherein each of the sets of the micro mirrors providing the pixels for each of the differing ones of the images has a differing cone angle offset, wherein the cone angle offset is defined based

upon a relative position of a cone axis for a cone of rays projected by the sets of the micro mirrors through each of the pixels.” Ex. 1001, claim 1. Petitioner relies on Fuhse262 to teach most of the limitations of claim 1, including limitation [1d]. Pet. 22–52. Petitioner first asserts that Fuhse262 teaches that each light spot (pixel) of an image is produced by a unique set of micro mirrors. Pet. 34–35 (citing Ex. 1006 ¶¶ 19–20, 91–92). Petitioner further contends that Fuhse262 teaches that each light spot forms the apex of a cone formed by the reflected light rays from the micromirrors that produce the light spot, the micromirrors located within a “sphere of influence” or “catchment area” that forms the base of the cone. *Id.* at 35–36 (citing Ex. 1006 ¶¶ 36, 126; Ex. 1003 ¶ 160). Petitioner submits that “a POSITA would have recognized that the axis of that cone would be formed through the apex and center of the catchment area of each cone.” *Id.* at 37 (citing Ex. 1003 ¶ 162).

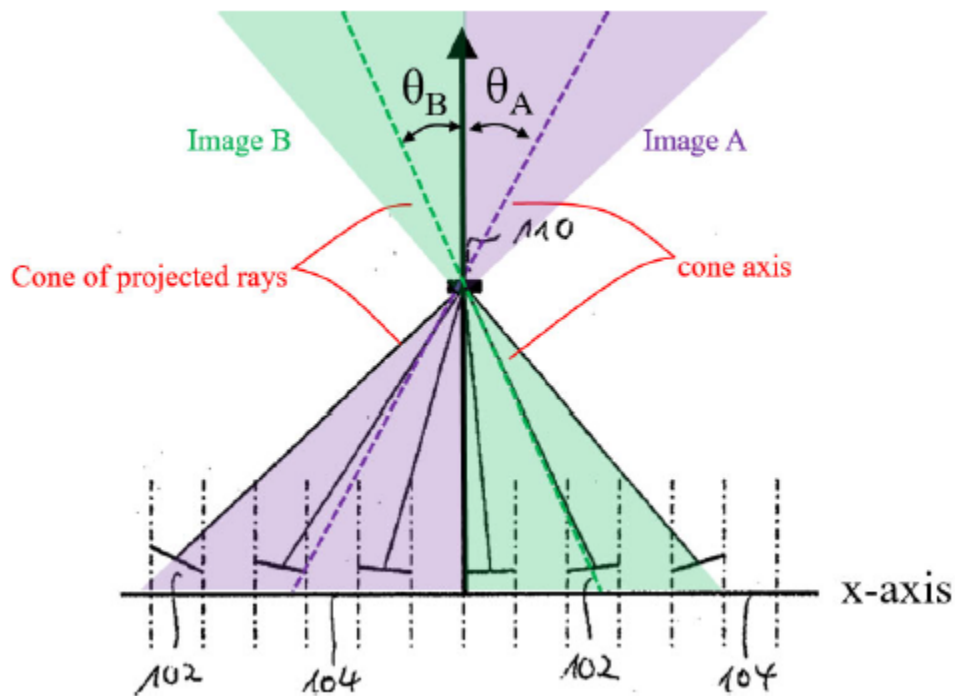
According to Petitioner, “Fuhse262 also teaches producing two images that are visible at different viewing angles,” which is “accomplished by omitting mirrors with certain x-components of the micromirror normal” for horizontal tilting, and “in the same way but in the y-axis” for vertical tilting. Pet. 38 (citing Ex. 1006 ¶ 114; Ex. 1003 ¶ 165). Petitioner provides annotated versions of Fuhse262’s Figure 9(a), reproduced below, to illustrate this teaching:



According to Petitioner's annotations, for "image A,"⁷ micromirrors in which the x component n_x of the normal vector is less than zero are omitted, so that only rays pointing left to right (purple) are provided; for "image B," micromirrors with n_x greater than zero are omitted, so that only rays pointing from right to left (green) are provided. Pet. 38–39 (citing Ex. 1003 ¶ 166).

Petitioner contends that the resulting cones have a cone angle that is offset from a line perpendicular to the substrate, and "[t]he particular offset for each cone depends on the range of normal values of the micro mirrors for the given pixels, as taught by Fuhse262." Pet. 40 (citing Ex. 1003 ¶ 170). Petitioner provides another annotated version of Figure 9(a) of Fuhse262, reproduced below, that illustrates the offset angles for the Image-A and Image-B cones:

⁷ As Petitioner acknowledges (Pet. 39) "image A" and "image B" are actually single light spots/pixels rather than images, which are made up of multiple light spots. Ex. 1006 ¶¶ 10, 91–92.



Ex. 1006, Fig. 9(a) (annotated by Petitioner)

Petitioner's annotated Figure 9(a) depicts cone angles θ_A and θ_B for the cones producing Images A and B, respectively. Pet. 40–41 (citing Ex. 1003 ¶ 171). According to Petitioner:

Because the normal of the micromirrors for each image pixel are exclusive of each other (i.e. each image has a distinct range of normal values to 'separate' the images) (EX1006, ¶0115), each of the sets of the micro mirrors providing the pixels for each of the differing ones of the images has a differing cone angle offset. Thus, a POSITA would understand that there is a differing cone angle offset for each image because the surface normal of each image, which dictate the cone of reflected rays and cone axis, are required to be different.

Id. at 40.

Patent Owner disputes, *inter alia*, that Fuhse262 teaches limitation [1d]. Prelim. Resp. 10–14. Patent Owner particularly takes issue with Petitioner's statement that "a POSITA would understand that ***there is a***

differing cone angle offset for each image because the surface normal of each image, which dictate the cone of reflected rays and cone axis, are required to be different.” *Id.* at 11 (quoting Pet. 41) (emphasis added by Patent Owner). According to Patent Owner, “element [1d] does not recite or require that the sets of micro mirrors for each image have different cone angle offsets—element [1d] instead recites that ‘*each of the sets of micro mirrors providing pixels . . . for each of the differing ones of the images* has a differing cone angle offset.’” *Id.* at 11–12 (quoting Ex. 1001, claim 1) (emphasis added by Patent Owner). Patent Owner thus submits that:

When read properly, element [1d] requires that (1) each set of micro mirrors that produce pixels for the first image has a different cone angle offset from the other sets for the first image and; (2) each set of micro mirrors that produce pixels for the second image has a different cone angle offset from the other sets for the second image.

Id. at 12.

We agree with Patent Owner’s reading of limitation [1d]. This limitation requires that *each set* of micro mirrors has a differing cone angle offset. A claim requiring “each” of an item to have a particular structure requires *all* instances of the item to have that structure. *See In re Skvorecz*, 580 F.3d 1262, 1267 (Fed. Cir. 2009) (claim reciting that “each wire leg” have an offset is not satisfied by prior-art device in which not all of its wire legs have an offset); *cf. Micron Tech., Inc. v. U.S.*, 243 F.3d 1301, 1308 (Fed. Cir. 2001) (“The use of the words ‘each’ and ‘any’ to modify ‘employee . . . leaves no doubt as to the Congressional intention to include all employees within the scope of the [Fair Labor Standards] Act unless specifically excluded.”) (quoting *U.S. v. Rosenwasser*, 323 U.S. 360, 362–63 (1945)); *ResQNet.com v. Lansa, Inc.*, 346 F.3d 1374, 1379 (Fed. Cir. 2003)

(excerpt in specification using words “each field” and “fields” refers to all, not just some, fields). Thus, for *each* set of micro mirrors providing the pixels for *each* image to have a “differing cone angle offset,” the cone angle offsets of all the sets of micro mirrors must differ from each other.

Consequently, as Patent Owner states (Prelim. Resp. 12), a set of micromirrors producing a pixel for a first image must have a cone angle offset that is different from the other sets of micromirrors producing pixels for that image, and also different from the sets of micromirrors producing pixels for any other image. Petitioner has not made us aware of anything in the Specification that suggests otherwise.

We are not persuaded that Fuhse262 teaches limitation [1d] under this interpretation. Petitioner has not identified, and we are unable to find, any teaching in Fuhse262 that each set of micro mirrors providing the pixels for each of the differing ones of the images has a differing cone angle offset from those of the other sets of micro mirrors. Petitioner asserts instead that “a POSITA would understand that there is **a differing cone angle offset** for each image because the surface normal of each image, which dictate the cone of reflected rays and cone axis, are required to be different.” Pet. 41. But this assertion suggests, at most, that the sets of micro mirrors that create pixels for a first image have different cone angle offsets than the sets of micro mirrors that create pixels for a second image; Petitioner does not appear to be asserting that, e.g., all the sets of micro mirrors creating pixels for the first image are also different from each other, as limitation [1d] requires.

Because we are not persuaded that Fuhse262 teaches limitation [1d], we are not persuaded that Petitioner has a reasonable likelihood of prevailing

in showing that claim 1 would have been obvious over Fuhse262 and Fuhse925.

4. *Independent Claims 6 and 12*

Limitation [6d] of independent claim 6 and limitation [12d] of independent claim 12 are substantially the same as limitation [1d]. Ex. 1001, claims 6, 12. Petitioner relies on the same analysis to support its contentions that Fuhse262 teaches limitations [6d] and [12d] as that advanced for limitation [1d]. Pet. 53, 55. Therefore, for the reasons discussed above in connection with limitation [1d], we are not persuaded that Petitioner has a reasonable likelihood of prevailing in showing that claims 6 and 12 would have been obvious over Fuhse262 and Fuhse925.

5. *Dependent Claims 4, 5, 7, 10, and 11*

Claims 4 and 5 ultimately depend from claim 1; claims 7, 10, and 11 ultimately depend from claim 6. Ex. 1001, 28:64–30:6. Because we determined that Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to claims 1 and 6, we likewise determine that Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to claims 4, 5, 7, 10, and 11.

6. *Conclusion as to Ground 1*

For the above reasons, we are not persuaded that Petitioner has a reasonable likelihood of prevailing with respect to Ground 1.

E. *Ground 2: Obviousness of Claims 1, 4–7, and 10–12 over Fuhse262, Fuhse925, and Jordan*

Petitioner contends that claims 1, 4–7, and 10–12 would have been obvious over Fuhse262, Fuhse925, and Jordan. Pet. 60–62. Jordan teaches

“[i]ntegral image and moiré magnification devices” that “have been employed to provide authentication of currency and documents, to identify and distinguish authentic products from counterfeit products, and to provide visual enhancement of manufactured articles and packaging.” Ex. 1009, code (54), ¶ 35. Petitioner states that Ground 2 “is the same as Ground 1, but additionally relies on Jordan’s teachings regarding the useful applications of optical security elements, as relevant to the preamble.” Pet. 60 (citing Ex. 1003 ¶¶ 234–251). Thus, Jordan is not relied on to cure the deficiencies noted above regarding limitations [1d], [6d], and [12d]. For that reason, we are not persuaded that Petitioner is reasonably likely to prevail with respect to Ground 1.

F. Grounds 3 and 4: Obviousness of Claims 3, 9, and 13 over Fuhse262, Fuhse925, and Fuhse172, or over Fuhse262, Fuhse925, Jordan, and Fuhse172

Petitioner contends that claims 3, 9, and 13 would have been obvious over: (1) Fuhse262, Fuhse925, and Fuhse172 (Ground 3); or, alternatively, over: (2) Fuhse262, Fuhse925, Jordan, and Fuhse172 (Ground 4). Pet. 62–67. Each of claims 3, 9, and 13 depends, respectively, from claims 1, 6, and 12, and includes additional limitations directed to displaying images “in at least two colors.” Ex. 1001, claims 3, 9, 13. Fuhse172 discloses applying a color-shifting coating to pixel-producing “facets” on a security element so that different colors are perceptible to a viewer. Ex. 1035 ¶¶ 27–29, 118. Fuhse172 is relied on solely to teach the additional limitations of claims 3, 9, and 13, and is not relied on to cure the deficiencies noted above regarding limitations [1d], [6d], and [12d]. For that reason, we are not persuaded that Petitioner is reasonably likely to prevail with respect to Grounds 3 and 4.

III.CONCLUSION

For the foregoing reasons, we determine that Petitioner has not shown that there is a reasonable likelihood that it would prevail with respect to at least one of the claims challenged in the Petition. Accordingly, we do not institute *inter partes* review of claims 1, 3–7, and 9–13 of the '691 patent on any asserted ground.

IV. ORDER

For the reasons given, it is

ORDERED that pursuant to 35 U.S.C. § 314(a), the Petition for *Inter Partes* Review is *denied*.

IPR2024-00837
Patent 10,317,691 B2

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