

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG DISPLAY CO., LTD.,
Petitioner,

v.

PICTIVA DISPLAYS INTERNATIONAL LTD.,
Patent Owner.

Case No. IPR2024-01187

Patent No. 9,257,492

PETITIONER'S REPLY BRIEF

TABLE OF CONTENTS

I.	Introduction.....	1
II.	Pictiva’s Constructions Should be Rejected.....	1
	A. <i>First Electrically Conductive Layer on a Substrate and Second Electrically Conductive Layer on the First Electrically Conductive Layer</i> (Claims 1, 10, and 16)	1
	B. <i>A First Trench in the First and Second Electrically Conductive Layers</i> (Claims 1 and 16)	5
	C. <i>Forming a First Trench</i> (Claim 1)	7
III.	Ground I: Ingle and Hasei Render Obvious Claims 1-2, 8-11, and 16.	11
	A. Ingle in view of Hasei Renders Obvious <i>Applying an Electrically Conductive Electrode Layer in a Structured Fashion</i> (Limitations 1[e], 10[f], 10[i], 16[e])......	12
	B. Ingle in view of Hasei Renders Obvious <i>Applying an Electrically Conductive Electrode Layer ... Above the First Contact Region</i> (Limitations 1[e], 10[f], 16[e])......	17
	C. Ingle, as Modified by Hasei, Results in a Working Electronic Component.	21
IV.	Ground II: Hanamura Renders Obvious Claims 1, 2, 8, and 16.	23
	A. Hanamura Discloses a <i>Second Electrically Conductive Layer</i> (Limitations 1[b], 16[b]).	24
	B. Hanamura Discloses a <i>First Trench in the First and Second Electrically Conductive Layers</i> (Limitations 1[c], 16[c])......	27
	C. Hanamura Discloses <i>Forming a First Trench</i> (Limitation 1[c]).	29
V.	Ground III: Hanamura and Egitto Render Obvious Claims 3, 5, and 6.	30
VI.	Conclusion	32

TABLE OF AUTHORITIES

Page(s)

Cases

<i>Altiris, Inc. v. Symantec Corp.</i> , 318 F.3d 1363 (Fed. Cir. 2003)	8, 10
<i>Arlington Indus., Inc. v. Bridgeport Fittings, Inc.</i> , 632 F.3d 1246 (Fed. Cir. 2011)	15
<i>Baldwin Graphic Sys., Inc. v. Siebert, Inc.</i> , 512 F.3d 1338 (Fed. Cir. 2008)	8
<i>Hisense USA Corp. v. Brightplus Ventures LLC</i> , IPR2023-01410, Paper 7 (P.T.A.B. Apr. 2, 2024)	4
<i>In re Altman</i> 264 F.2d 894, 894 (C.C.P.A. 1958)	10
<i>Institut Pasteur v. Focarino</i> , 738 F.3d 1337 (Fed. Cir. 2013)	14
<i>KSR Int’l. Co. v. Teleflex Inc.</i> , 550 U.S. 398 (2007)	15, 22
<i>Liebel-Flarsheim Co., v. Medrad, Inc.</i> , 358 F.3d 898 (Fed. Cir. 2004)	3, 6, 10
<i>Loral Fairchild Corp. v. Sony Corp.</i> , 181 F.3d 1313 (Fed. Cir. 1999)	11
<i>Mantech Env’t. Corp. v. Hudson Env’t. Servs., Inc.</i> , 152 F.3d 1368 (Fed. Cir. 1998)	11
<i>Moba BV v. Diamond Automation, Inc.</i> , 325 F.3d 1306 (Fed. Cir. 2003)	8
<i>Nystrom v. TREX Co., Inc.</i> , 424 F.3d 1136 (Fed. Cir. 2005)	19

<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005)	1, 2, 26
<i>RF Del., Inc. v. Pac. Keystone Techs., Inc.</i> , 326 F.3d 1255 (Fed. Cir. 2003)	6
<i>Sandisk Corp. v. Memorex Prods., Inc.</i> , 415 F.3d 1278 (Fed. Cir. 2005)	5
<i>SRI Intern v. Matsushita Elec. Corp. of Am.</i> , 775 F.2d 1107 (Fed. Cir. 1985)	10
<i>Thorner v. Sony Comput. Entm't Am. LLC</i> , 669 F.3d 1362 (Fed. Cir. 2012)	5
<i>Virtek Vision Int'l ULC v. Assembly Guidance Sys.</i> , 97 F.4th 882 (Fed. Cir. 2024)	21
<i>Williamson v. Citrix Online LLC</i> , 792 F.3d 1339 (Fed. Cir. 2015)	6, 9, 26, 30

TABLE OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 9,257,492
1002	File History for U.S. Patent No. 9,257,492
1003	Declaration of Alex Kattamis, Ph.D.
1004	World Intellectual Property Organization Published Application No. 2011/036089 A1 (Ingle)
1005	Certified English Translation of World Intellectual Property Organization Published Application No. 2011/036089 A1 (Ingle)
1006	Japanese Patent Application Publication No. JP 2003-317610 (Hasei)
1007	Certified English Translation of Japanese Patent Application No. JP 2003-317610 (Hasei)
1008	U.S. Patent No. 5,691,877 (Hanamura)
1009	LEFT BLANK
1010	U.S. Patent No. 7,817,117
1011	LEFT BLANK
1012	LEFT BLANK
1013	U.S. Patent Publication No. 2009/0178271 (Egitto)
1014	James L. Sanford and Frank R. Libsch, <i>TFT AMOLED Pixel Circuits and Driving Methods</i> , 4.2 SID 03 Digest 10-12 (2003)
1015	Reiji Hattori et al., <i>Current-Writing Active-Matrix Circuit for Organic Light-Emitting Diode Display Using aSi:H Thin-Film-Transistors</i> , IEICE Trans. Electron., Vol.e83-C, No. 5 (May 2000)
1016	U.S. Patent No. 3,997,411 (Muenz)
1017	James W. Nilsson and Susan A. Riedel, <i>Electric Circuits</i> , Addison-Wesley Publishing Co. (5th ed. 1996)
1018	Alan B. Grebene, <i>Bipolar And MOS Analog Integrated Circuit Design</i> , John Wiley & Sons (1983)
1019	IEEE 100, <i>The Authoritative Dictionary of IEEE Standards Terms</i> (7th ed. Dec. 2000)
1020	Jiun-Haw Lee et al., <i>Introduction To Flat Panel Displays</i> , John Wiley & Sons (2008)
1021	Robert A. Street, <i>Technology and Applications of Amorphous Silicon in Materials Science</i> , Vol. 37 (2000)

Exhibit No.	Description
1022	Gary S. May and Costas J. Spanos, <i>Fundamentals of Semiconductor Manufacturing and Process Control</i> (2006)
1023	Bruce E. Kahn, <i>Printing Methods for Printed Electronics</i> , Soc’y For Imagin Sci. & Tech.: NIP24 and Digital Fabrication 15-20 (2008), https://doi.org/10.2352/ISSN.2169-4451.2008.24.1.art00005_1
1024	Ana C. Arias et al., <i>Materials and Applications for Large Area Electronics: Solution-Based Approaches</i> , 110 Chemical Reviews 3-24 (2010)
1025	Docket Control Order, <i>Pictiva Displays International Ltd. v. Samsung Elec. Co., Ltd.</i> , No. 2:23-cv-00495, Dkt. #40 (E.D. Tex. Apr. 17, 2024)
1026	<i>Pictiva Displays Int’l Ltd. v. Samsung Elecs. Co.</i> , No. 2:23-cv-0495 (E.D. Tex.), <i>Sotera</i> Stipulation
1027	Plaintiffs’ Notice Of Narrowing Of Asserted Patents For Purposes Of Trial, <i>Pictiva Displays International Ltd. v. Samsung Elec. Co., Ltd.</i> , No. 2:23-cv-00495, Dkt. #203 (E.D. Tex. March 18, 2025)
1028	Curriculum Vitae of Alex Kattamis, Ph.D.
1029	Declaration of Jared R. Frisch in Support of Petitioner’s Notice of Intent to Designate Jared R. Frisch as Back-up Counsel under 37 C.F.R. § 42.10
1030	Supplemental Declaration of Alex Kattamis, Ph.D.
1031	Merriam-Webster’s Collegiate Dictionary, 11th ed. 2007 (Excerpts)
1032	Merriam-Webster’s Collegiate Dictionary, 11th ed. 2012 (Excerpts)
1033	Transcript of August 20, 2025 Deposition of Dr. P. Morgan Pattison

I. INTRODUCTION

Pictiva's attempts to overlook the prior art's full teachings and unduly limit the Challenged Claims are unsupported. The prior art references are not limited to their figures, and the claims are not restricted to the patent's preferred embodiments. When the references are considered in totality and the claims are properly construed, the Challenged Claims are obvious.

II. PICTIVA'S CONSTRUCTIONS SHOULD BE REJECTED

Pictiva's constructions, which were not raised in the related litigation, Ex.2007, 37-46, should be rejected. These terms involve nontechnical words not needing specialized construction. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005). Pictiva purports to apply plain and ordinary meanings, but actually imports limitations from preferred embodiments to distinguish Hanamura (Grounds II-III). Pictiva's approach contradicts clear precedent and should be rejected. *Id.* at 1323.

A. *First Electrically Conductive Layer on a Substrate and Second Electrically Conductive Layer on the First Electrically Conductive Layer (Claims 1, 10, and 16)*

Pictiva initially purports to apply the "plain and ordinary meaning" by replacing *layer* with "material formed":

[[forming] a first electrically conductive ~~layer~~ material formed on a substrate,

[forming] a second electrically conductive ~~layer~~-material formed on the first electrically conductive layer,

'492 patent, cls. 1, 10, 16 (as modified by Pictiva); POR, 16. But Pictiva then significantly narrows its constructions by arguing that (1) *first electrically conductive layer* must exclude “materials not formed on the substrate” and *second electrically conductive layer* must exclude “materials not formed on the first electrically conductive layer,” and (2) the terms “include only the electrically conductive material, and not any areas lacking such material.” *Id.*

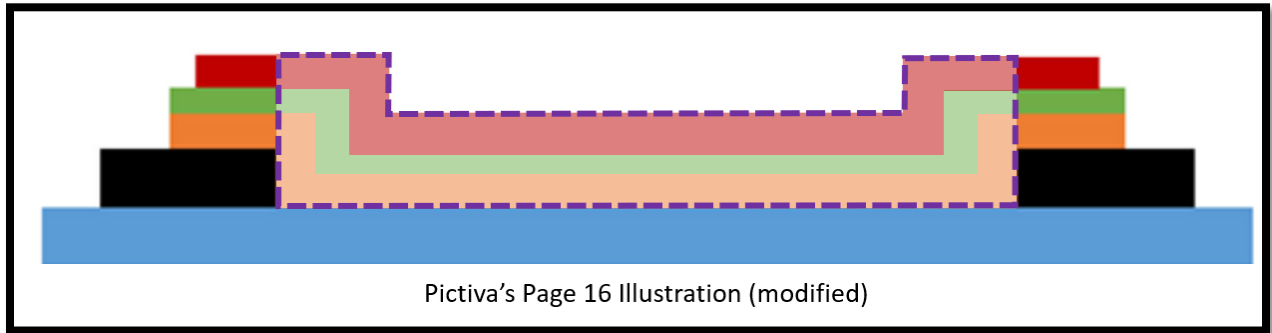
Pictiva's first restriction places the cart before the horse. One must first understand what the *first* and *second electrically conductive layer[s]* are before determining what they are *on*. Ex.1033, 96:8-97:18 (agreeing you must first identify the *first* and *second electrically conductive layers* before determining what they are *on*).

Pictiva's intentions are clear. It seeks to improperly dissect what are indisputably single layers to avoid Hanamura. This is demonstrated in Pictiva's own hypothetical, which arbitrarily divides layers based on the materials underlying portions thereof:

[I]f the black layer is mapped to the first electrically conductive layer, at least the central portion of the orange, green, or red layer [shown by the annotated purple dashed-line] is not a second electrically

conductive layer because it is not on the black first electrically conductive layer.

POR, 16.



This is facially nonsensical and not the “plain and ordinary meaning.” Ex.1030, ¶¶10-13; Ex.1033, 100:10-15 (agreeing layers are determined by what they are made of), 102:5-105:14 (agreeing red, green, and orange layers are each “layer[s] of electrically conductive material”).

That the specification purportedly “includes no disclosure of a second electrically conductive layer including any material not formed on the first electrically conductive layer,” POR, 19, is immaterial. The '492 patent contemplates other embodiments. '492 patent, 11:5-8 (“one embodiment”), 8:8-11 (“other embodiments”), 20:16-25 (“various changes ... may be made”). No “clear intention” otherwise is expressed, *Liebel-Flarsheim Co., v. Medrad, Inc.*, 358 F.3d 898, 906

(Fed. Cir. 2004), and there is no reason to limit *on* accordingly.¹ *See, Hisense USA Corp. v. Brightplus Ventures LLC*, IPR2023-01410, Paper 7 at 11-12 (P.T.A.B. Apr. 2, 2024) (“Figure 5A ... shows an embodiment where there does not appear to be any air gap between layers. Nowhere does the written description, however, limit the meaning of ‘on’ to that embodiment.”) (citation omitted); Ex.1033, 57:5-58:2.

Pictiva’s second restriction—to “interpret these terms to include only the electrically conductive material, and not any area lacking such material,” POR, 16—should also be rejected to the extent it does not allow other, non-electrically-conductive materials as part of the layer. Even if the passage Pictiva identifies (’492 patent, 2:36-41) is considered definitional, it states that “[t]he first electrically conductive layer includes a first electrically conductive material and the second ... includes a second electrically conductive material.”² “[I]ncludes’ means

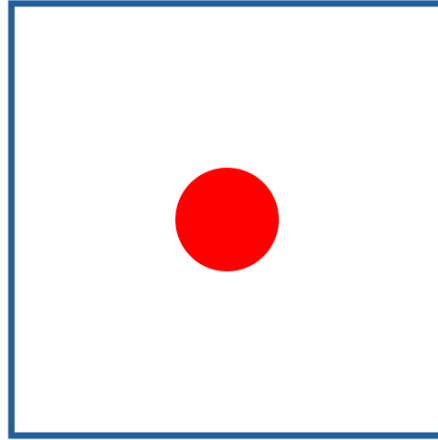
¹ Pictiva’s hypothetical OLED/capacitor structure, POR, 19-20, and allegation “that some electrically conductive material,” should “remain[],” POR, 20, are irrelevant. Claims 1 and 16 do not require an OLED. Moreover, that OLED/capacitor structures may require a second electrically conductive layer formed on a first in one region does not require the second layer be formed on the first everywhere. Ex.1030, ¶13.

² All emphasis added unless otherwise noted.

‘comprising’” and does not “foreclose[] additional elements.” *Sandisk Corp. v. Memorex Prods., Inc.*, 415 F.3d 1278, 1284 (Fed. Cir. 2005).

B. *A First Trench in the First and Second Electrically Conductive Layers (Claims 1 and 16)*

Pictiva’s construction—“a trench defined by (and thus adjacent to) edges of the electrically conductive material of both the first and second electrically conductive layers,” POR, 21, relies on an overly narrow construction of *in*. Ex.1030, ¶14. *In* is a nontechnical term with a commonly understood meaning. Ex.1031, 627 (“used as a function word to indicate inclusion, location, or position within limits.”); Ex.1032, 627 (same). Pictiva cites nothing suggesting that *in* was redefined or partially disavowed. See *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (discussing the “two exceptions” to the rule that “[t]he words of a claim are generally given their ordinary and customary meaning”). Just as the red circle below is *in* (i.e., positioned within the limits of) the blue square without being “defined by (and thus adjacent to)” the square’s walls, *a first trench* can be *in* the claimed layers without being “defined by (and thus adjacent to)” those layers’ edges.



Again, Pictiva’s construction improperly limits the claims to preferred embodiments, POR, 21-22, which is repeatedly “cautioned against.” *Williamson v. Citrix Online LLC*, 792 F.3d 1339, 1346-47 (Fed. Cir. 2015). That Pictiva’s construction allegedly is “consistent with the ’492 patent’s description of forming the first trench using techniques such as etching or laser ablation,” POR, 22, does not justify limiting the claims. *Liebel-Flarsheim*, 358 F.3d at 906. Claim 7—which depends from claim 1 and is necessarily narrower—is directed to *laser ablation*.

Likewise, that claim 9 is allegedly “only possible if those edges or side surfaces are adjacent to (and in fact define the sides of) the first trench,” POR, 23, is not limiting. To the extent claim 9 requires the first and second electrically conductive layers’ edges to be adjacent to the first trench, that only means that claim 1 must be broad enough to cover such an embodiment—not that it be limited as such. *See RF Del., Inc. v. Pac. Keystone Techs., Inc.*, 326 F.3d 1255, 1264 (Fed. Cir. 2003) (“An independent claim usually covers a scope broader than the preferred

embodiment, especially if the dependent claims recite the precise scope of the preferred embodiment.”).

Pictiva’s further assertion that *in* “should mean the trench extends through the electrically conductive material of both the first and second layers,” POR, 22, is irrelevant. The claim undisputedly requires *a first trench in the first and second electrically conductive layers*. The dispute concerns Pictiva’s restriction that the trench must be “defined by (and thus adjacent to) edges of the” layers. POR, 21.

C. *Forming a First Trench (Claim 1)*

Pictiva’s construction should be rejected. Paper 7, 2-4. Again, Pictiva purports to apply the “plain and ordinary meaning”: “requir[ing] the creation of something that did not previously exist,” but then narrows its own construction to add two unsupported limitations:

The plain and ordinary meaning of the claim requires the creation of a trench by removing certain portions of the previously formed first and second electrically conductive layers.

POR, 24.

Nothing about the claim requires removal—it does not use the term “removing”; it merely requires *forming* the first trench. *Forming* has a widely accepted and broader meaning. Ex.1031, 492 (“to give a particular shape to: shape or mold into a certain state or after a particular model”); Ex.1032, 492 (same).

Forming encompasses not only subtractive processes like removal, but also additive processes. Ex.1030, ¶15.

Second, method claims are “not limited to the performance of the steps in the order recited, unless the claim explicitly or implicitly requires a specific order.” *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1345 (Fed. Cir. 2008). Nor is “separate and consecutive performance” of the claimed steps required. *Moba BV v. Diamond Automation, Inc.*, 325 F.3d 1306, 1314 (Fed. Cir. 2003).

Claim 1 does not explicitly require a specific order, despite the applicant knowing how to draft claims containing explicit language:

Cl. 3: before the dielectric is applied

Cl. 9: dielectric firstly is applied ... then ...

Cl. 11: before the optically functional layer is applied

Cl. 12: after the structured application of the dielectric and before
 the removal

Claim 1 only recites *forming* conductive layers and *forming a first trench* in those layers.

Nor does claim 1 implicitly require a specific order. Courts “look to the claim language to determine if, as a matter of logic or grammar, they must [implicitly] be performed in the order written,” and “[i]f not ... look to the rest of the specification to determine whether it ‘directly or implicitly requires such a narrow construction.’” *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1369-70 (Fed. Cir. 2003).

First, neither logic nor grammar requires separate and consecutive performance. While a *first trench* cannot be formed before depositing the conductive layers, it may be formed concurrently therewith. Ex.1003, ¶¶233-34. For example, depositing material with predetermined spacing forms a trench between the two deposits. *Id.* Nor does claim 1 grammatically require that the *conductive layers* exist before the trench is formed. As discussed, the applicant knew how to grammatically write claims requiring specific order, but chose not to.

Second, the specification does not require separate and consecutive performance. Whether it “consistently describe[s] and depict[s] these distinct steps in the recited order,” POR, 24, is inapposite. *Williamson*, 792 F.3d at 1346-47. So is the fact that it indicates that “the electrically conductive layers can be applied ‘without structure’ and can be subject to ‘subsequent structuring.’” POR, 24. The disclosures Pictiva relies upon show this is only one exemplar embodiment:

[F]irst electrically conductive layer 12 can be applied ... for example
in a planar fashion

....

[S]econd electrically conductive layer 14 can be applied ... for example
in a planar fashion....

’492 patent, 11:2-4, 11:24-26. Indeed, Pictiva’s expert acknowledges that the conductive layers “can be (but need not be) applied ‘in a planar fashion.’” Ex.2001,

¶34.³ And the specification explains that “other embodiments can be used and structural or logical changes can be made.” ’492 patent, 8:8-11.

Even if the specification only explicitly describes an embodiment where the *first trench* is formed by removing material after the *first* and *second electrically conductive layers* are formed, the Federal Circuit “has expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment.” *Liebel-Flarsheim*, 358 F.3d at 906. For example, the Federal Circuit has held that “it was improper to read a specific order of steps into method claims because the specification ‘nowhere included any disclaimer of any order of steps.’” *Id.* at 906 (citation modified) (quoting *Altiris*, 318 F.3d at 1371).

Pictiva’s caselaw is distinguishable. *In re Altman* involved a claim explicitly requiring order. 264 F.2d 894, 894 (C.C.P.A. 1958) (“then dewatering the slurry”).

³ Pictiva’s reference to disclosures of forming a trench via etching and laser ablation, POR, 24-25, is unavailing. For example, dependent claim 7 claims a trench “formed by laser ablation.” ’492 patent, cl. 7. “[W]hen a patent claim does not contain a certain limitation and another claim does, that limitation cannot be read into the former claim....” *SRI Intern v. Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1122 (Fed. Cir. 1985).

In *Loral* and *Mantech* each step logically could not occur until after the previous steps. *Loral Fairchild Corp. v. Sony Corp.*, 181 F.3d 1313, 1317-18 (Fed. Cir. 1999) (claiming “an insulated gate ... used as a mask when the ion implantation barriers are established,” thereby necessitating forming the insulation first)⁴; *Mantech Env’t. Corp. v. Hudson Env’t. Servs., Inc.*, 152 F.3d 1368, 1375-76 (Fed. Cir. 1998) (“Because the acidic conditions and the ferrous ion must be present before the hydrogen peroxide can undergo the Fenton-like reaction, step (d) must come after both steps (b) and (c)”). As discussed, nothing here explicitly or implicitly requires similar treatment.

III. GROUND I: INGLE AND HASEI RENDER OBVIOUS CLAIMS 1-2, 8-11, AND 16.

Ingle undisputedly discloses limitations 1[a]-[d], 10[b]-[e], [g], and 16[a]-[d]. POR, 9. It is further undisputed that Ingle in view of Hasei render obvious limitation 10[h] and the additional limitations of dependent claims 2 and 8-11. *See id.*, 28-51.

Pictiva only argues that Ingle and Hasei fail to render obvious: (A) applying an *electrically conductive electrode layer in a structured fashion*; (B) applying an

⁴ Further distinguishing *Loral*, “[d]uring prosecution, the patent applicant limited his claim to the sequence of the steps [expressly] enumerated.” 181 F.3d at 1321.

electrically conductive layer ... above the first contact region; and (C) a “working” capacitor. Each argument fails.

A. Ingle in view of Hasei Renders Obvious *Applying an Electrically Conductive Electrode Layer in a Structured Fashion* (Limitations 1[e], 10[f], 10[i], 16[e]).

Ingle teaches that an “OLED, can ... be produced ... using a conventional process,” on its base structure. Ingle, 21:34-36; Ex.1003, ¶110; Pet., 18-20. Hasei, published five years before Ingle, teaches one example of such a process. Ex.1003, ¶111. Pictiva acknowledges that Ingle teaches forming the OLED through “a conventional process,” but incorrectly asserts that Ingle’s “conventional process” is limited to “lithography.” POR, 31.

First, nothing indicates that Ingle’s reference to “a conventional process” for forming OLEDs at 21:34-36 concerns Ingle’s separate reference to “conventionally used photolithography methods” at 16:19-21.

Second, Ingle’s description of photolithographic methods as “conventional” does not mean that they are the only conventional methods. Indeed, Ingle teaches away from photolithography, touting that its method “is usually free of photolithographic steps.” Ingle, 18:7-10. POSITAs would therefore understand that Ingle’s OLED fabrication is not limited to photolithography. Ex.2006, 66:22-68:16.

Third, POSITAs understood that, when building OLEDs, photolithography “was avoided, because of damage to organic layers” particularly when forming

cathodes atop the organic material. Ex.2006, 21:11-12. Ex.1030, ¶19; Ex.1023, 16 (photolithography “will destroy the activity of most organic electronic materials”).

Pictiva’s assertion that “Ingle contemplates structured application of only ... the insulator (or dielectric) and protective material layers,” POR, 32, is plainly incorrect. Ingle expressly teaches structuring its electrode regions:

With the method according to the invention, it is possible to separate two electrode regions from one another, wherein the electrode regions are structured at a preselected position during the application of the layers of electrode regions

....

If the structuring is already present (i.e. is applied “earlier”), this can be done by applying the first and second electrically conductive layers ... by printing, by deposition with the aid of SAMs (self-assembling monolayers) and the like.

Ingle, 6:9-23. Even if Ingle does not disclose structuring electrodes (it does), Ingle teaches the benefits of avoiding photolithography, Ingle, 18:7-10, as does Hasei, Hasei, [0016]. Hasei further discloses structuring its cathode. *Id.*, [0037]. These teachings would have motivated POSITAs to use structured techniques. Pet., 21-26.

Pictiva’s assertion that Hasei does not disclose “applying an electrically conductive electrode ... in a structured fashion,” POR, 33-34, is incorrect. Hasei’s “negative electrode 50 may be formed by the droplet discharging method,” Hasei,

[0037], which is undisputedly a structured method. POR, 34. Pictiva argues that droplet discharge “is not what Hasei calls the ‘conventional process,’” and that Hasei “does not apply this improved process to the electrode layer 50 in Figure 3.” *Id.* These arguments fail.

First, whether Hasei calls droplet discharge “conventional” is irrelevant. Hasei was published in 2003—five years before Ingle’s application. Hasei, cover; Ingle, cover. What Ingle describes as “conventional” is not limited to what Hasei believed to be “conventional” years earlier.⁵ The opposite is true—one would expect Hasei’s teachings to become conventional by Ingle’s time, let alone by the ’492 patent’s 2012 claimed priority date. *Institut Pasteur v. Focarino*, 738 F.3d 1337, 1349 (Fed. Cir. 2013) (“obviousness is determined at the time the invention was made”). Ex.1030, ¶17. Indeed, Ingle teaches “printing” electrically conductive layers. Ingle, 19-23. Droplet discharge is an example of printing. Ex.1030, ¶¶17-18.

Second, as discussed above, Hasei teaches that “negative electrode 50 may be formed by the droplet discharging method” with respect to its Figure 3 embodiment. Hasei, [0037] (Hasei discusses Figure 3’s embodiment in [0031]-[0040]). Pictiva’s

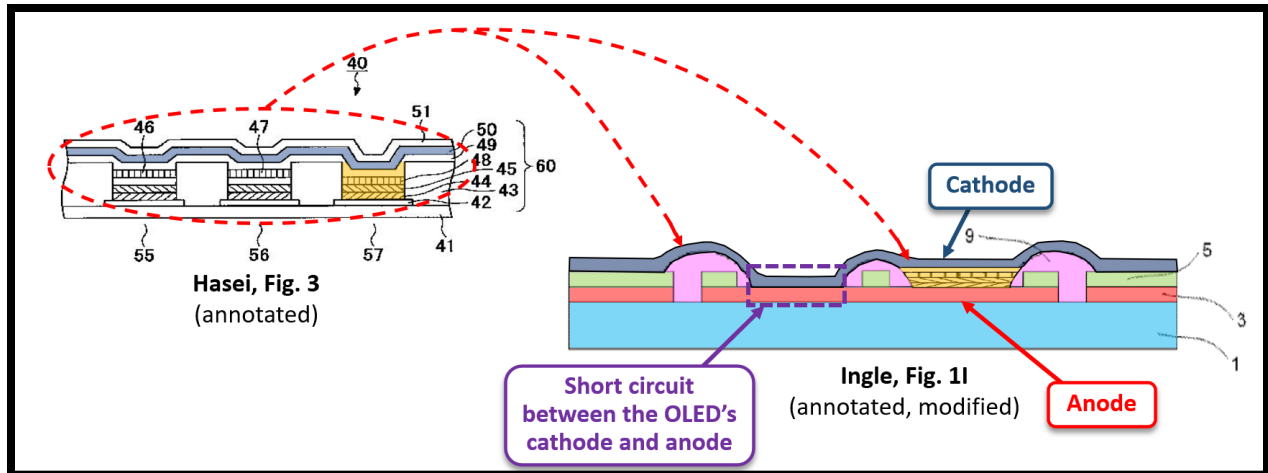
⁵ Dr. Kattamis did not “concede[] that, ... photolithography was the conventional method.” POR, 40. He merely agreed that photolithography was “a conventional” method. Ex.2006, 85:2-86:2.

focus on Figure 3's depiction while disregarding the specification is misplaced. Figure 3 is a two-dimensional cross-section lacking a planar view. Ex.2006, 74:17-75:1. Accordingly, it cannot be determined based on Figure 3 alone whether negative electrode 50 is structured. Ex.2006, 74:20-75:1, 79:4-20. Ex.1033, 69:15-73:5 (agreeing that cross-sections are not definitive as to structure).

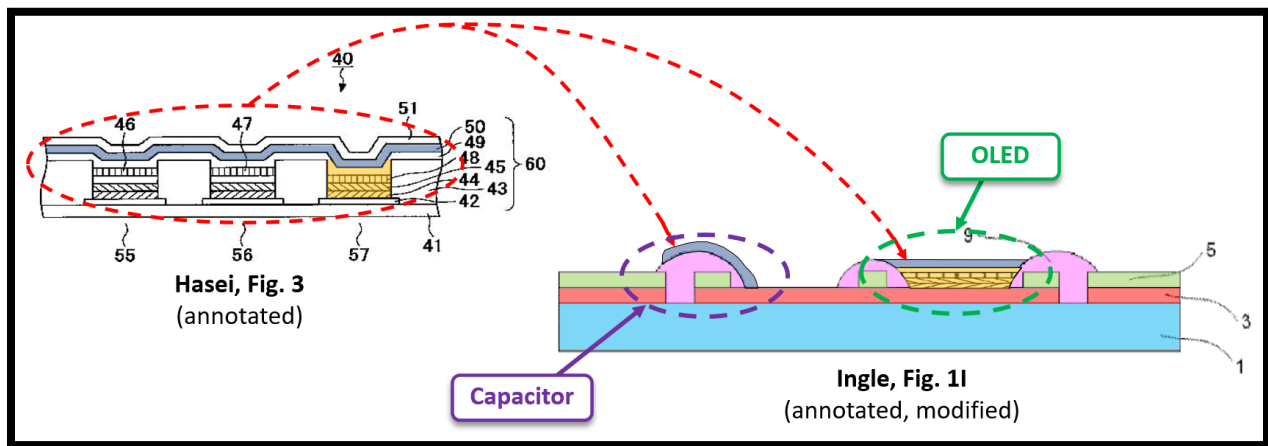
Pictiva's argument that negative electrode 50 is a "common electrode," POR, 35, is conjecture. Pictiva identifies no disclosure describing electrode 50 as "common." While Pictiva's expert argues that electrode 50 is common for "all of the sub-pixels," he acknowledges that it may not be common for all "pixels." Ex.2001, ¶76.

Even assuming electrode 50 is common, Hasei expressly teaches that it be formed using a "droplet discharging method." Hasei, [0037]. "[D]rawings in a patent need not illustrate the full scope of the invention." *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. 2011).

And even if Pictiva's characterization was correct (it is not), POSITAs would not blindly apply electrode 50 in a planar fashion. *See KSR Int'l. Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) ("person of ordinary skill is also a person of ordinary creativity"). As illustrated below, doing so would short circuit the OLED's anode and cathode. Ex.1030, ¶19.



Such planar application would therefore require subsequent etching, which risks damaging the OLED, Ex.1003, ¶¶91; Ex.1030, ¶¶19, and which both Hasei and Ingle teach against. Hasei, [0014]-[0015], [0037]; Ingle, 7:20-24, 15:19-24, 18:7-10. Accordingly, structurally applying electrode 50 would have been obvious.

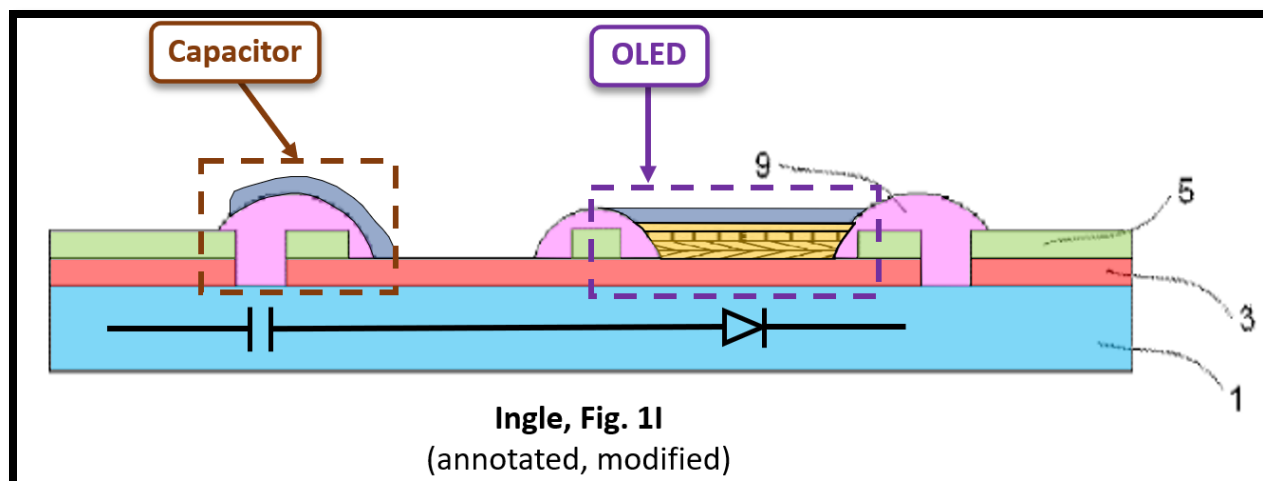


Finally, Pictiva's assertion that Hasei does not reference capacitors and "Petitioner provides no reason why POSITAs would have extended Hasei's method for producing its OLED to a capacitor," POR, 36, is incorrect. As the Petition explains, OLEDs were conventionally formed alongside capacitors in AMOLED

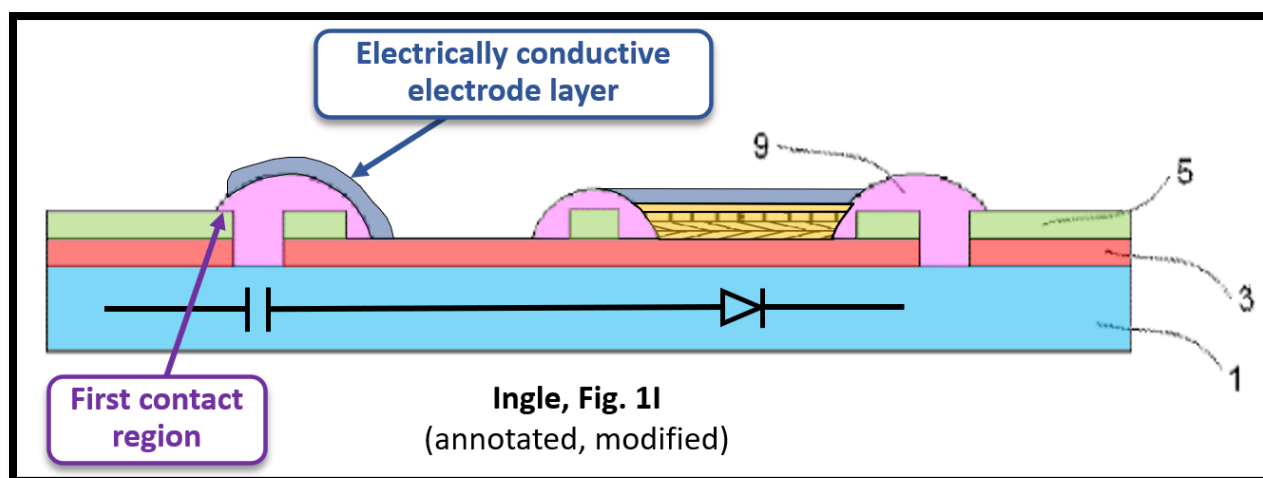
displays, and forming the OLED's and capacitor's cathodes in the same step reduces costs, complexity, and defect risks. Pet., 21-26; Ex.1003, ¶¶101-07, 120-25; Ex.1033, 29:5-13 (agreeing that AMOLED displays use capacitors). Hasei's AMOLED displays "require a capacitor." Ex.2006, 89:22-25; Hasei, [0039]. Accordingly, forming the OLED's and capacitor's cathodes in the same step would have been obvious. Pet., 25-26.

B. Ingle in view of Hasei Renders Obvious *Applying an Electrically Conductive Electrode Layer ... Above the First Contact Region* (Limitations 1[e], 10[f], 16[e]).

As discussed, Ingle and Hasei render obvious forming an OLED, which undisputably requires a cathode, on Ingle's base structure, and POSITAs would be motivated to add a capacitor alongside the OLED. Pet., 21-26; Ex.1003, ¶¶101-07, 120-25; Ex.1033, 29:5-13 (agreeing that AMOLED displays use capacitors). POSITAs "would recognize that a capacitor could be formed on Ingle's base structure ... by adding a second electrode (i.e., cathode) on top of the leftmost portion of insulator 9." Pet., 23; Ex.1003, ¶¶124-25.

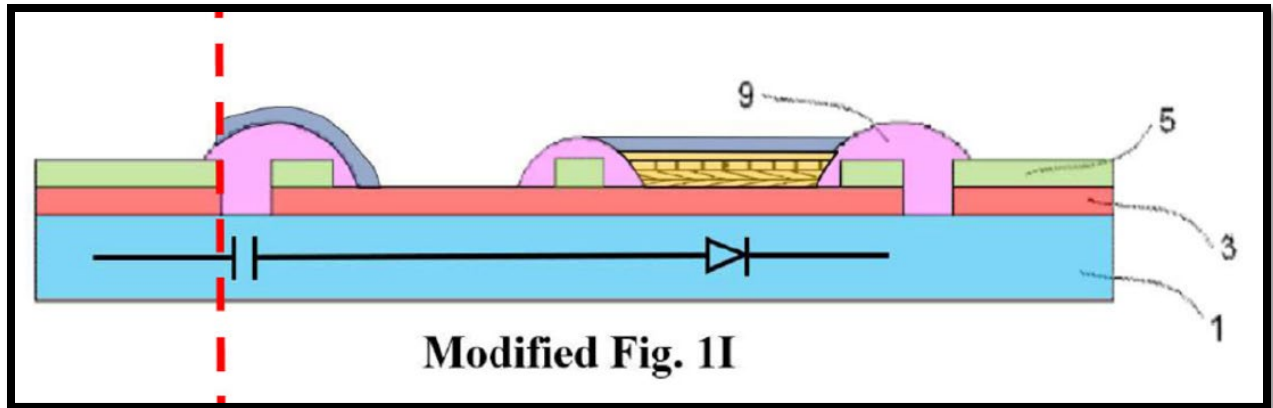


This modification results in an *electrically conductive electrode layer* formed *above* the first contact region:



POR, 36-37; Ex.1003, ¶¶161-71. Pictiva’s arguments fall short.

Pictiva adds “a broken red line” to the Petition’s modified Fig. 1I to argue that “the electrode (gray) ends at the right edge of the first contact region and it is therefore not ‘above’ the first contact region.” POR, 42-43.



Setting aside that Pictiva’s “broken red line” conveniently has a width large enough to obscure the overlap—as Dr. Pattison admitted, Ex.1033, 76:6-82:20 (admitting that “[t]here’s overlap”)—Pictiva largely ignores the Petition’s explanation that POSITAs “would understand that the degree to which both the dielectric (pink) and electrically conductive layer (grey) extend over the first contact region may be adjusted to fine tune the capacitance of the capacitor,” Pet., 38. e.g., to meet the capacitance requirements for an individual pixel circuit in an AMOLED display. Ex.1003, ¶167; Ex.1030, ¶¶20-21; Ex.1033, 58:22-67:11 (agreeing capacitors, their parameters, and how to adjust them were well known).

Pictiva’s comparison of Ingle, Figure 1I with ’492 patent, Figure 15, POR, 43-44, improperly assumes that both illustrations use identical scales. The Federal Circuit has repeatedly held that “arguments based on drawings not explicitly made to scale in issued patents are unavailing.” *Nystrom v. TREX Co., Inc.*, 424 F.3d 1136, 1149 (Fed. Cir. 2005). The ’492 patent’s “drawings are not necessarily to scale.” ’492 patent, 7:11-14; Ex.1033, 74:7-75:11 (’492 patent’s figures “not ... engineering

draw[ings],” are “hand drawn,” and lack “tolerances or dimensions”). And Ingle discourages limiting its invention to its figures, Ingle, 18:21-22 (“present invention is illustrated below without limiting the generality with reference to the figures”).

Pictiva’s assertion that Dr. Kattamis “concede[d] that Ingle does not disclose applying a cathode over a first contact region,” POR, 44, is misleading. Petitioner relies on Ingle, as modified by Hasei—not alone—to establish a cathode applied over the first contact region. Pet., 36-38.

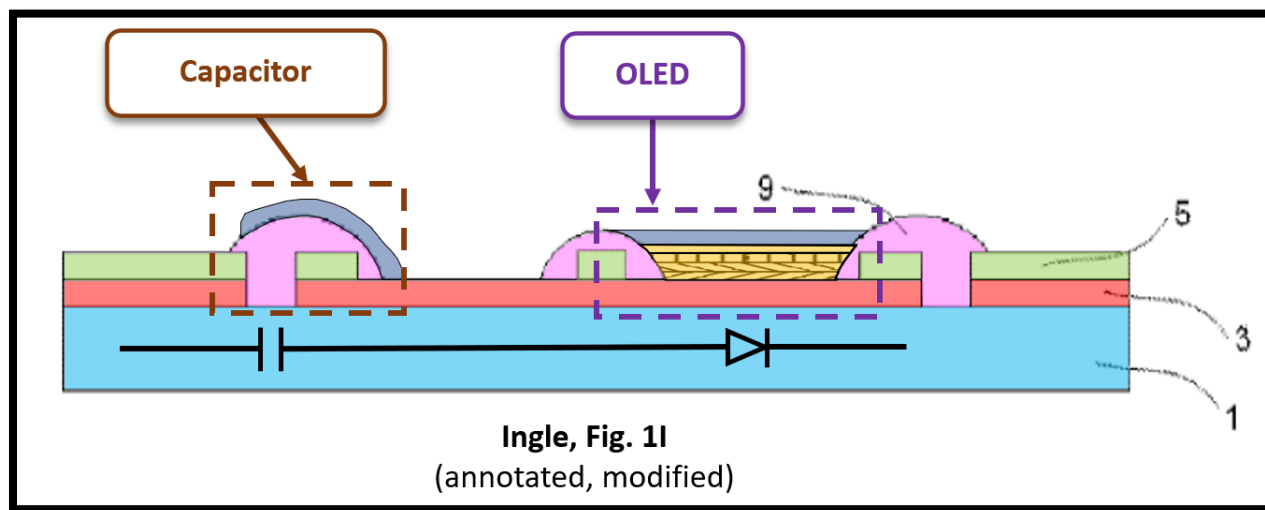
Pictiva’s focus on Dr. Kattamis’ statement that “Ingle’s capacitor *could be* completed on Ingle’s base structure,” POR, 46 (emphasis in original), is similarly misleading as it ignores the immediately prior sentence explaining that “it would have been obvious for POSITAs to form an electrode above the left-side dielectric in Ingle’s base structure ... in order to form a capacitor in series with the OLED.” Ex.1003, ¶162; *see also id.*, ¶¶120-25 (explaining why it would have been obvious).

Having established why POSITAs would “form a capacitor in series with the OLED,” Dr. Kattamis then explained the obvious solution: “applying an electrode above the [left-side] dielectric,” because “a capacitor is ... comprised of two conductors separated by an insulator,” and “Ingle’s base structure in the first contact region already provides a conductive layer and an insulating layer, above which a second electrode may readily be applied.” *Id.*, ¶162; Ex.1033, 59:21-61:2, 86:12-16. The Petition further explained why POSITAs would use Hasei’s method to form the

OLED’s cathode—i.e., to reduce waste and manufacturing time—and why doing so was nothing more than applying known methods to improve similar devices to obtain predictable results. Pet., 25-26; *see also* Ex.1003, ¶168-70. As noted, Ingle’s base structure can be used to form a capacitor and the trench region “represents the subsequent electrical insulation between the cathode and the anode of the electric component” (e.g., the capacitor). Pet., 23 (citing Ingle 20:1-7); *id.*, 27 (citing Ingle 6:3-7).⁶

C. Ingle, as Modified by Hasei, Results in a Working Electronic Component.

As previously discussed, Ingle, as modified by Hasei, results in a working capacitor placed alongside an OLED.



⁶ This is different from *Virtek*, where the petition “d[id] not provide any reason why a skilled artisan would [make the proposed modification].” 97 F.4th at 886.

Pictiva’s assertion that this combination “would not produce a functional capacitor” depends on the false assumption that the “cathode ... does not overlap the first contact region.” POR, 47. As discussed, there is overlap, the sufficiency of the overlap would depend on the scale, and POSITAs would understand “that the degree to which both the dielectric (pink) and the electrically conductive layer (grey) extend over the first contact region may be adjusted to fine tune the capacitance of the capacitor.” Pet., 38; Ex.1003, ¶¶167-70; Ex.2006, 97:22-93:3.

In making such adjustments, POSITAs, who are not “automaton[s],” *KSR*, 550 U.S. at 421, would account for Pictiva’s purported “problems.” POR, 48-51. POSITAs would use “ordinary creativity” to adjust the overlap—and the electrode’s and dielectric’s size and shape—to avoid short circuits to design a functional capacitor. *See KSR*, 550 U.S. at 421; Ex.1033, 58:22-67:11 (agreeing capacitors, their parameters, and how to adjust them were well known). As Dr. Kattamis explains:

[L]arger plates provide greater capacity to store electric charge, and thus, larger plates (with greater area) allow higher capacitance.... [T]he electrically conductive layer deposited on the dielectric acts as a second plate. The area of the electrically conductive layer (second plate) can be readily controlled due to structured application ... and adjusting the area would adjust the capacitance.

Ex.1003, ¶167. Likewise, POSITAs would extend “the dielectric” along with the plates to mitigate any short-circuit risks. Ex.1003, ¶167; Ex.2006, 100:14-17. Real-life capacitors would not necessarily have “steeply curved” geometries. Ex.2006, 101:2-102:18; Ex.1030, ¶21; Ex.1033, 57:13-16 (agreeing figures are not engineering drawings), 75:12-76:5 (agreeing “these figures are meant to convey the concept and I think you could adjust the process to make it more or less rounded” and that the ’492 patent never identifies an irregular distance between the anode and cathode of its capacitor as being problematic). And, POSITAs “would ensure that your layers and separations are large enough to prevent breakdown.” Ex.2006, 53:14-17. Pictiva’s expert offers nothing contradictory, identifying only problems that “could” or “can” result from poor designs. Ex.2005, ¶14; Ex.1033, 58:22-67:11 (agreeing designing capacitors and adjusting their parameters was well known).

IV. GROUND II: HANAMURA RENDERS OBVIOUS CLAIMS 1, 2, 8, AND 16.

Hanamura undisputedly renders obvious limitations 1[pre]-[a], 1[d]-[e], 16[pre]-[a], 16[d]-[e], and the additional limitations of dependent claims 2 and 8. POR, 51-62.

Pictiva only argues that Hanamura does not render obvious limitations 1[b]-[c] and 16[b]-[c]. *Id.* Pictiva’s arguments depend primarily on the adoption of

Pictiva's constructions, *id.*^{7, 8}, and should be rejected for the reasons discussed above.

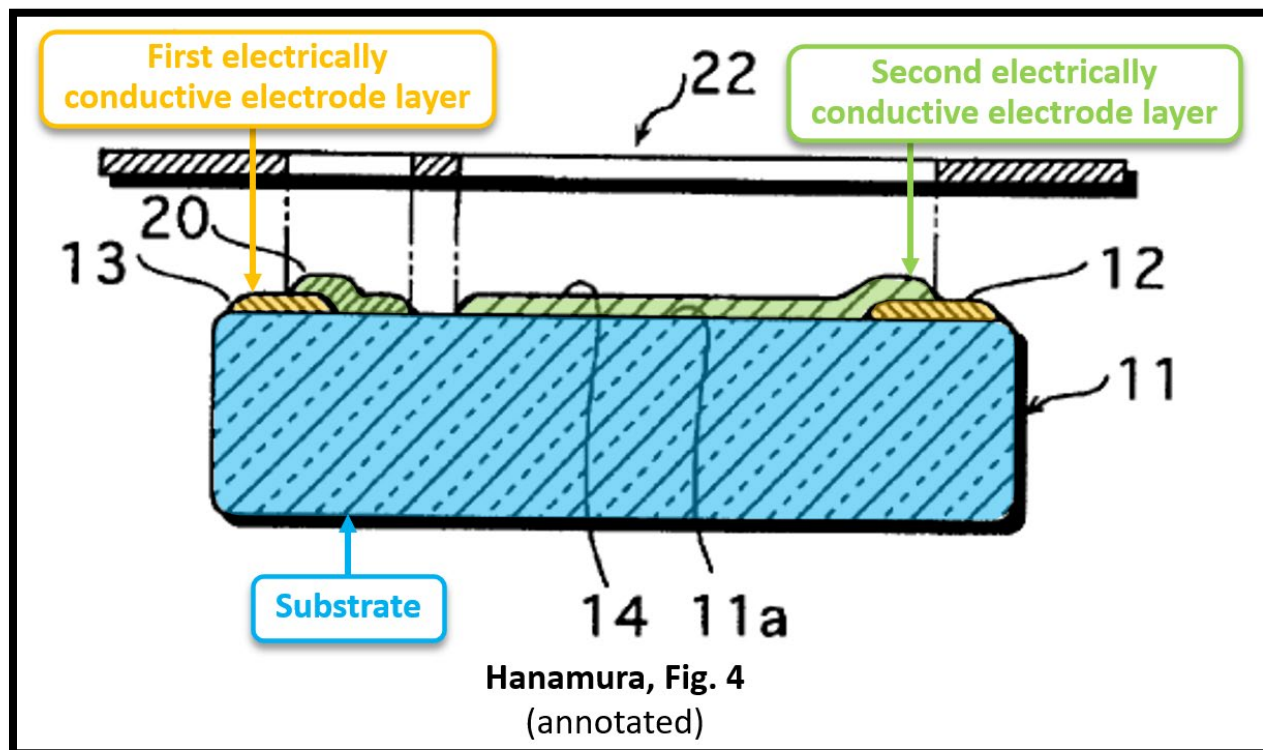
A. Hanamura Discloses a *Second Electrically Conductive Layer* (Limitations 1[b], 16[b]).

The Board correctly determined that Hanamura's "lead electrodes 12 and 13 teach a first conductive layer and that first capacitor electrode 14 in conjunction with

⁷ Pictiva's argument that Hanamura "differs dramatically [in size] from the integral capacitors ... contemplated by the '492 Patent," POR, 52, fails. The claims do not specify size nor require "integral capacitors," Ex.1033, 86:10-91:12, and Pictiva's expert cites no evidence supporting his assertion that "[t]his dramatic difference in size and scale is relevant." Ex.2005, ¶20; *see also* Ex.1030, ¶24. Ex.1033, 47:11-48:19, 49:18-50:3, 53:7-54:19 ('492 patent contemplates printing and does not specify that printing cannot be used), 55:4-13 ('492 patent uses conventional printing techniques).

⁸ Pictiva's argument that POSITAs would not have considered Hanamura, POR, 52, also fails. Hanamura and the '492 patent are from the same field of endeavor (e.g., Hanamura describes methods for producing passive electronic components) and Hanamura is reasonably pertinent to the problem faced by the inventor (e.g., Hanamura describes a structured process as an alternative to photolithography).

auxiliary electrode 20 teaches the second conductive layer,” D.I., 19, as depicted below.



See also Pet., 52; Ex.1003, ¶¶229-31.

Pictiva does not dispute that Hanamura discloses this limitation under any construction of “layer” but its own, POR, 53, which should be rejected. *Supra*, §II.A.⁹

⁹ This limitation is met even under Pictiva’s construction because portions of electrodes 14 and 20 lie directly above the *first electrically conductive layer* (electrodes 12 and 13). See POR, 16 (discounting only the portions of the second layer not directly above the first).

As Pictiva acknowledges, Hanamura’s *second electrically conductive electrode layer* (green) is on the *first electrically conductive layer* (yellow). POR, 53-54 (“‘first electrically conductive layer’ ... ‘second electrically conductive layer’ ... are in fact four adjacent and slightly overlapping electrodes”); Ex.2005, ¶23.

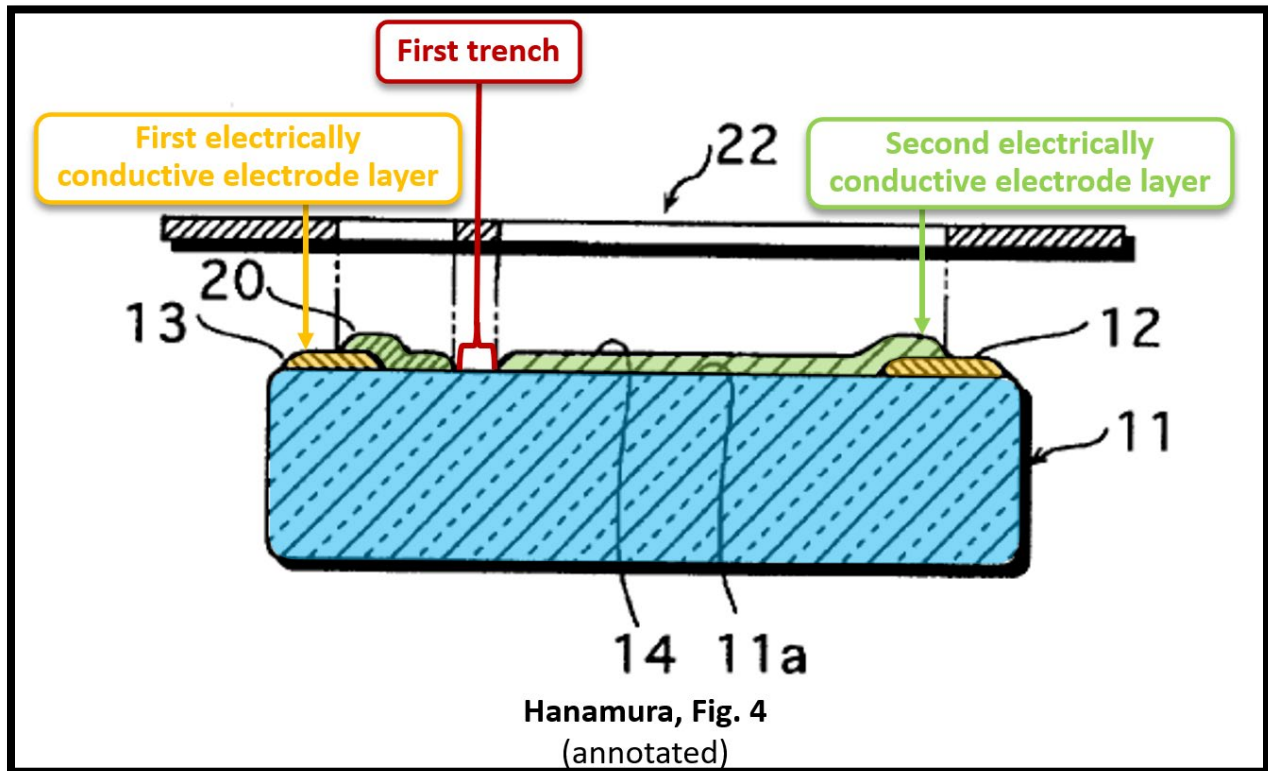
Pictiva’s use of exemplary embodiments to improperly read-in limitations, POR, 54-56, should be rejected for the reasons discussed above. *Phillips*, 415 F.3d at 1323. Even if the preferred embodiment depicts “distinct planar layers,” this cannot limit the claims. *See Williamson*, 792 F.3d at 1346-47. Indeed, the specification states that planar application is optional. ’492 patent, 11:24-26 (“second electrically conductive layer 14 can be applied ... in a planar fashion”).

Finally, Pictiva misplaces reliance on Hanamura’s lexicography to interpret the ’492 patent’s claimed *layer*. POR, 56. *See Phillips*, 415 F.3d at 1316 (“inventor’s lexicography governs”). That Hanamura calls elements 12-14 and 20 “electrodes” instead of “layers” does not change the fact that electrodes 12-13, which are simultaneously deposited using the same material, and electrodes 14, 20, which are also simultaneously deposited with the same material, are the *first* and *second electrically conductive layers*, respectively. Ex.1003, ¶¶223-31; Ex.1008, 5:25-32.¹⁰

¹⁰ Pictiva’s expert acknowledges that layers need not be continuous. Ex.2001, ¶37.

B. Hanamura Discloses a *First Trench in the First and Second Electrically Conductive Layers* (Limitations 1[c], 16[c]).

The Board correctly determined that “there is a reasonable likelihood that Hanamura teaches a trench in the first and second electrically conductive layers,” D.I., 20, as depicted below.



See also Pet., 53-54; Ex.1003, ¶¶232-35.

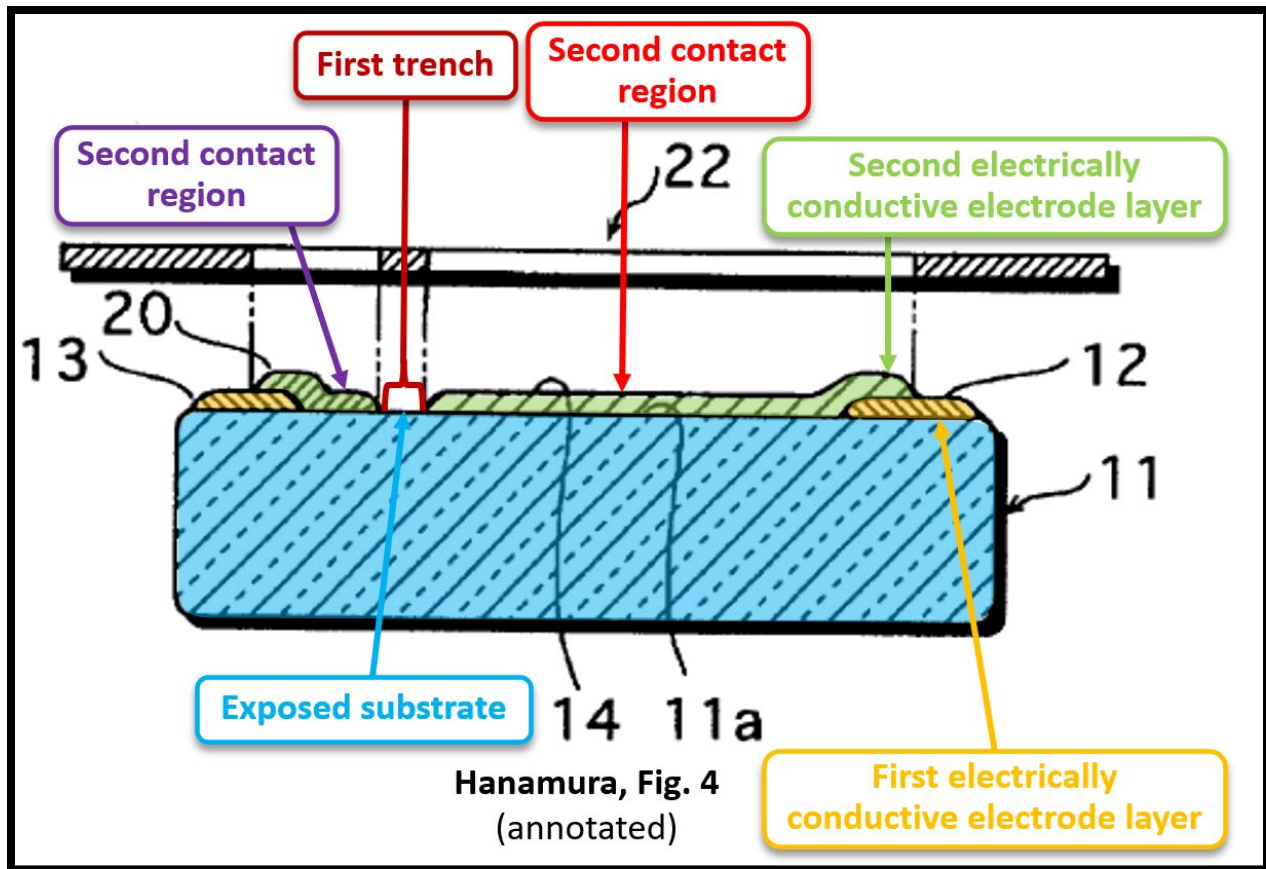
Pictiva does not dispute that Hanamura discloses this limitation under any construction but its own, POR, 57, which should be rejected. *Supra*, §§II.A-B.

As illustrated above, Hanamura’s *first trench* is in the *first and second electrically conductive layers*. That it is not “adjacent to” the *first electrically conductive layer* is irrelevant. The claims do not include, nor should be construed to

include, that limitation. *Supra*, §II.B. Likewise, the *second electrically conductive layer* encompasses all of electrodes 14 and 20, as *layer* should not be construed to include only the portions directly above electrodes 12-13. *Supra*, §§II.A, IV.A.

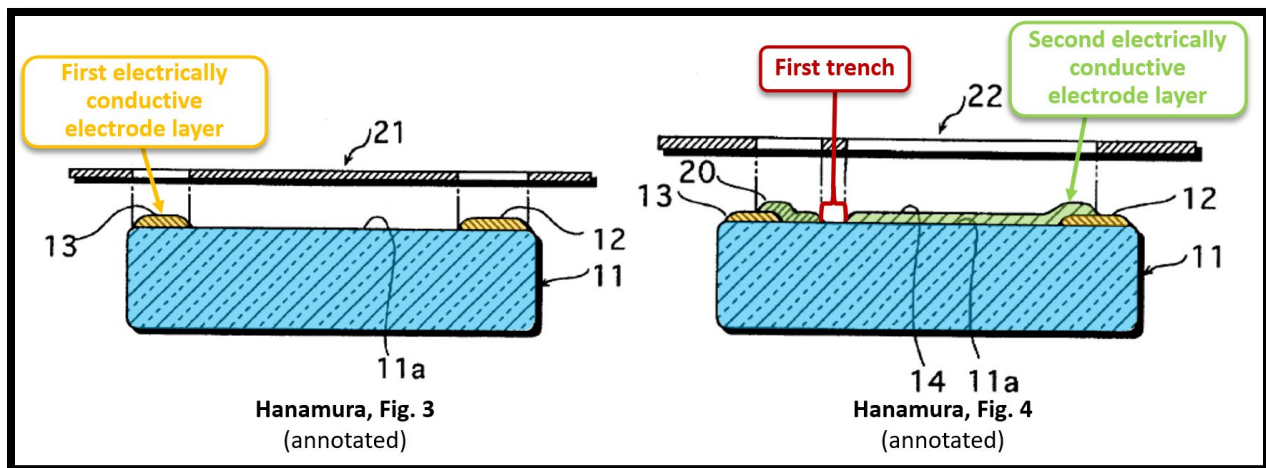
Pictiva is incorrect that Hanamura's *first trench* is only in the *second electrically conductive layer* and not the *first electrically conductive layer*. POR, 60. If Hanamura's *first trench* was not in the *first electrically conductive layer*, electrodes 12 and 13 would short circuit (as is true for electrodes 14 and 20). Ex.1030, ¶25; Ex.1033, 84:10-85:16, 93:1-95:7 (Hanamura's screen printing and predetermined spacing avoids short circuits).

Pictiva's expert's purported rationale for why POSITAs "would understand the importance of the claimed 'first trench' being 'in' both electrically conductive layers," Ex.2005, ¶31, underscores that Hanamura renders obvious the claims. Pictiva's expert argues that "the functionality of certain components ... (e.g., a capacitor) requires the trench to expose the substrate and separate the first and second contact regions." *Id.* As depicted below, Hanamura's trench both "expose[s] the substrate" and "separate[s] the first and second contact regions" for the exact same purpose. Pet., 53-54; Ex.1003, ¶¶232-35.



C. Hanamura Discloses *Forming a First Trench* (Limitation 1[c]).

Hanamura discloses *forming a first trench*, as depicted below. Pet., 53-54; Ex.1003, ¶¶232-35.

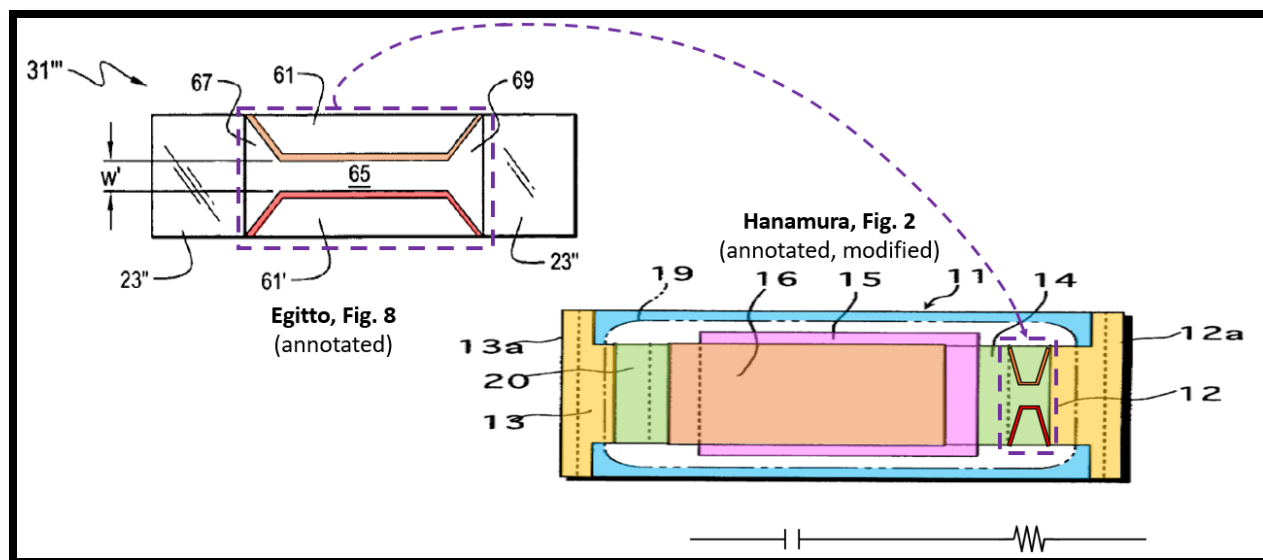


Pictiva does not dispute that Hanamura discloses this limitation absent adoption of Pictiva’s construction. POR, 61. Instead, Pictiva’s argument rests on its incorrect assertion that the claim “require[s] ... removing certain portions of the previously formed first and second electrically conductive layers.” *Id.* However, as discussed above, the claim requires only forming a first trench, not forming a trench via removal. *Supra*, §II.C.

Pictiva’s assertion that Hanamura’s *first trench* “already exists” and therefore there is “no possibility ... to ‘form’ the alleged trench,” POR, 62, is nonsensical. As depicted above, Hanamura’s trench is formed concurrently with the *first* and *second electrically conductive layers*. And as discussed above, claim 1 does not require removal “methods such as ‘etching’ or ‘laser ablation’ to ‘form’ a trench.” POR, 62; *supra*, §II.C. Claims are not limited to the patent’s preferred embodiments. *Williamson*, 792 F.3d at 1346-4.

V. GROUND III: HANAMURA AND EGITTO RENDER OBVIOUS CLAIMS 3, 5, AND 6.

Modifying Hanamura to include a resistor with Egitto’s shape—which allows “circuit designer[s] to alter the resulting resistance by selectively removing ... material,” Egitto, ¶82—would have been obvious. Pet., 60-72; Ex.1003, ¶¶257-97.



Pictiva does not dispute that including a resistor in Hanamura would have been obvious; that Egitto discloses materially the same resistor design claimed in the '492 patent; or that Egitto's resistor in Hanamura would function. POR, 63-66. Pictiva's only argument is that "neither the Petition nor Dr. Kattamis' declaration provide any specific motivation to combine the teachings of Hanamura with the specific 'representative pattern[]' described in Egitto." POR, 64.

As Pictiva acknowledges, POR, 65, the Petition explained that "[u]sing the design from Egitto in the electrically conductive layers of Hanamura would involve nothing more than applying a known technique to a known device ready for improvement to yield predictable results," Pet., 65. Pictiva's argument that this is "conclusory," POR, 65, overlooks that Egitto only discloses two adjustable resistor patterns (Figs. 7-8), and the Petition's detailed explanation that: (1) Hanamura sought to incorporate a reliably adjusted resistor, *id.*, 60, (2) Hanamura did so by

trimming a groove, *id.*, 60-61, and (3) Egitto teaches a specific method and design (using well-known formulas) enabling POSITAs to alter resistance by selectively removing material and forming a precise path for current flow, *id.*, 66. The motivation to use Egitto’s design in Hanamura was explained in detail. *E.g.*:

Egitto teaches that this groove 30A may be formed into specific, predictable patterns using a laser. Carving this groove would result in a predictable change to resistance.... Indeed, Egitto teaches ... that its method “enables the circuit designer to alter the resulting resistance by selectively removing ... material and leaving a desired, precise width thereof remaining as the current path.”

Ex.1003, ¶269. *See also* Pet., 60-66; Ex.1003, ¶¶257-85.¹¹

Finally, Pictiva’s argument of the claimed design’s alleged nonobviousness is belied by the Court’s finding in the related litigation, which Pictiva did not dispute, that “all possible taper directions would satisfy this language.” Ex.2007, 43.

VI. CONCLUSION

Petitioner respectfully requests that the Board find all Challenged Claims obvious.

¹¹ Pictiva’s characterization of Dr. Kattamis’ “admission,” POR, 65, ignores his explanation that “the[] two [geometries] disclosed by Egitto have the benefits as described in Egitto, control being one of them,” Ex.2006, 106:18-25.

Date: September 3, 2025

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CERTIFICATION UNDER 37 C.F.R. § 42.24(D)

I certify that the foregoing complies with the type-volume limitation of 37 C.F.R. § 42.24 and contains 5,572 words based on the word count indicated by the word-processing system used to prepare the paper, and excluding those portions exempted by § 42.24(a).

Date: September 3, 2025

/ Scott C. Weidenfeller /
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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6, I hereby certify that the foregoing Petitioner's Reply was served by electronic mail on the following counsel of record for patent owner:

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Date: September 3, 2025

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