

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SCHOTT GEMTRON CORPORATION,  
Petitioner,

v.

SSW HOLDING COMPANY, INC.,  
Patent Owner.

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Case IPR2013-00358  
Patent 8,286,561 B2

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Before JUSTIN T. ARBES, PHILIP J. HOFFMANN, and  
GEORGIANNA W. BRADEN, *Administrative Patent Judges*.

BRADEN, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

## I. INTRODUCTION

### A. *Background*

SCHOTT Gemtron Corporation (“Petitioner”) filed an Amended Petition (Paper 5, “Pet.”) requesting *inter partes* review of claims 1, 13, and 25 of U.S. Patent No. 8,286,561 B2 (Ex. 1001, “the ’561 patent”) pursuant to 35 U.S.C. §§ 311–19. SSW Holding Company, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 12, “Prelim. Resp.”). On November 4, 2013, we instituted this *inter partes* review of claims 1, 13, and 25 on two grounds of unpatentability alleged in the Petition. Paper 14 (“Dec. to Inst.”). After institution of review, Patent Owner filed a Response (Paper 46, “PO Resp.”) to the Petition. Petitioner filed a Reply (Paper 62 (confidential); Paper 63 (public)) (“Reply”) to Patent Owner’s Response.

Counsel for both Petitioner and Patent Owner were present and presented argument at an oral hearing held on June 23, 2014.<sup>1</sup>

The Board has jurisdiction under 35 U.S.C. § 6(c). In this final written decision, issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73, we determine Petitioner has not proven by a preponderance of the evidence that claims 1, 13, and 25 of the ’561 patent are unpatentable.

### B. *The ’561 Patent*

The ’561 patent describes shelving, such as shelving adapted for use in refrigerators and having a top surface with a hydrophobic surface

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<sup>1</sup> A transcript (“Trans.”) of the oral hearing is included in the record. Paper 105. Each party filed objections to the opposing party’s demonstrative exhibits to be used at the oral hearing. *See* Papers 98, 101, 103. As none of the objected-to demonstrative exhibits impact our analysis in this decision, we decline to expunge any of these exhibits from the record. Thus, both party’s objections are dismissed as moot.

arranged in a spill containment pattern. Ex. 1001, col. 1, ll. 15–18; col. 2, ll. 1–4. The spill containment pattern is intended to act as a barrier to prevent spilled liquid from spilling onto other surfaces. *Id.* at col. 11, ll. 28–37. An example of a spill containment pattern is shown in Figure 3 of the '561 patent, reproduced below:

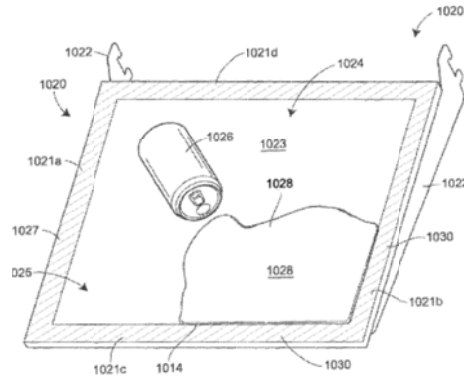


FIG. 3

Figure 3 illustrates a preferred embodiment that includes shelving with a spill containment pattern consisting of a hydrophobic surface in the pattern of a frame-like border. *Id.* at col. 2, ll. 26–30; col. 3, ll. 43–45. The border defines the boundaries of a single non-hydrophobic spill containment area therein. *Id.* at col. 3, ll. 39–46.

### *C. Challenged Claims*

Challenged claims 1, 13, and 25 are reproduced below.

1. A shelf assembly comprising:
  - a shelf panel having a generally flat top surface which is capable of supporting articles which may be placed on said shelf panel;
  - a hydrophobic surface applied in a spill containment pattern on said top surface;
  - wherein the majority of the surface area of said top surface of the shelf panel is not hydrophobic, thereby providing one or more non-hydrophobic central portions bounded by said spill containment pattern of said hydrophobic surface.
  
13. The shelf assembly of claim 1, wherein the hydrophobic surface comprises:
  - a ceramic frit layer adjacent to and bonded to the top surface of said shelf panel; and
  - a hydrophobic compound coated over the ceramic frit layer.
  
25. A method of manufacturing a shelf capable of containing liquid spills thereon comprising:
  - providing a panel having a generally flat top surface which is capable of supporting articles which may be placed on said panel;
  - applying a hydrophobic surface arranged in a spill containment pattern generally in the plane of said top surface;
  - leaving the majority of the surface area of said top surface of the panel non-hydrophobic, thereby providing one or more non-hydrophobic central portions bounded by the spill containment pattern of the hydrophobic surface.

*D. Prior Art References Alleged to Support Unpatentability*

The following table summarizes the prior art references asserted in the instituted grounds:

Name	Description	Date	Exhibit
Angros	US 5,948,685	Sept. 7, 1999	Ex. 1005
Baumann	US 6,872,441 B2	Mar. 29, 2005	Ex. 1007
Picken	International Publ. No. WO 2006/044641 A2	Apr. 27, 2006	Ex. 1009

*E. Alleged Grounds of Unpatentability Instituted for Trial*

The following table summarizes the challenges to patentability that were instituted for *inter partes* review:

Reference(s)	Basis	Claim(s) Challenged
Angros and Picken	§ 103(a)	1, 25
Angros, Picken, and Baumann	§ 103(a)	13

II. ANALYSIS

A. Claim Interpretation

1. Prior Construed Claim Terms

In the Decision to Institute, we interpreted various claim terms of the '561 patent as follows:

Term(s)	Interpretation
“shelf panel”	“a piece of material positioned horizontally at a distance above some other surface to hold objects”

Term(s)	Interpretation
“generally in the plane of said top surface”	“all or a portion of the hydrophobic surface extending a small distance above the level of the top surface of the shelf panel that is not readily noticeable to the naked eye”
“majority of the surface area of said top surface of the shelf panel is not hydrophobic”	“the surface area of the non-hydrophobic portion is greater than the surface area of the hydrophobic portion”
“leaving the majority of the surface area of said top surface of the panel non-hydrophobic”	“the surface area of the non-hydrophobic portion is greater than the surface area of the hydrophobic portion”

*See Dec. to Inst. 6–9.* During the course of the trial, neither party challenged our construction of the claim terms. Thus, we see no reason to alter the constructions set forth in the Decision to Institute and we incorporate our previous analysis for purposes of this decision.

*2. Presently Construed Claim Term: “spill”*

Claim 1 recites a “hydrophobic surface applied in a spill containment pattern.” Claim 25 recites a “method of manufacturing a shelf capable of containing liquid spills thereon,” comprising “applying a hydrophobic surface arranged in a spill containment pattern.” Although the Petition and Patent Owner’s Response do not set forth a formal construction for the claim term “spill,” given the arguments presented by the parties, we now determine that a construction is necessary. In its Preliminary Response, Patent Owner argued that the plain meaning of “spill” is “an accidental or unintentional release of liquid.” Prelim. Resp. 15. According to Patent

Owner, its position is supported by a dictionary definition of “spill,” which is “to cause or allow esp[ecially] accidentally or unintentionally to fall, flow, or run so as to be lost or wasted.” *Id.* at 15 (citing Merriam-Webster’s Collegiate Dictionary 1202 (11th ed. 2006)) (Ex. 2003). Patent Owner contends that its proffered “plain meaning is also consistent with the ’561 Patent specification, which describes with reference to Fig. 3, for example, one type of spill occurring when an open soda can is turned over onto its side on the top surface of the shelf panel.” *Id.* at 15 (citing Ex. 1001, col. 11, ll. 28–49). As Patent Owner explains, “[a] person of ordinary skill in the art would understand that this orientation of the opened soda can would be unintentional because it is not generally desirable to spill soda in a refrigerator.” *Id.*

Petitioner, however, argued at the oral hearing that the term “spill” is not limited by the ’561 patent to encompass only unintended, sudden, unexpected, or violent releases of liquid on a surface. Trans. 10:14–24, 18:9–12. Rather, according to Petitioner, “spill” in the context of the ’561 patent has a “very specific meaning,” which is merely “liquid being placed on the surface.” *Id.* at 10:20–21. According to Petitioner, such an interpretation of “spill” is supported by Examples 1–29 in the ’561 patent, which describes the intentional and methodical pouring of liquid onto a surface bounded by hydrophobic material. *Id.* at 11:1–11; Reply 1–2.

Petitioner’s position is unpersuasive. Contrary to Petitioner’s characterization, Example 1 in the ’561 patent discloses only a demonstration of water retention by a shelf with a hydrophobic border. *See* Ex. 1001, col. 20, ll. 1–9. The patent recounts, in Example 1, a test to determine the amount of water retainable on a shelf, within a hydrophobic

border, without leakage. *Id.* Thus, Example 1 does not show that the term “spill” merely means liquid placed on a surface. Therefore, we construe “spill,” in accordance with its plain meaning and consistent with the specification of the ’561 patent, to mean “an accidental or unintentional release of liquid.” *See* Ex. 2003; Ex. 1001, col. 11, ll. 28–49 (describing Figure 3 as illustrating “the concept that the hydrophobic surface 1030 will form a spill containment barrier,” and using soda can 1026 turned on its side as an example for “spilled liquid”).

*B. Claims 1 and 25—Alleged Obviousness over Angros and Picken*

Petitioner alleges that claims 1 and 25 of the ’561 patent are unpatentable under 35 U.S.C. § 103(a) over Angros and Picken. Pet. 22–23, 33–34. Patent Owner disputes Petitioner’s position, arguing that Angros is not analogous art and that a person of ordinary skill in the art would not have had reason to combine the references in the manner proposed by Petitioner. PO Resp. 9–10.

As discussed below, we are persuaded by Patent Owner’s arguments. Thus, we determine that Petitioner has not shown by a preponderance of the evidence that claims 1 and 25 are unpatentable as obvious over Angros and Picken.

1. Angros’s Disclosure

Angros describes an analytic plate, such as a microscope slide or a diagnostic plate, having a containment border for containing a liquid. Ex. 1005, Abstract. Angros discloses that the containment border can be a hydrophobic material applied to the plate surface in a bordered pattern to confine liquid that is applied to the plate within the area surrounded by the border. *Id.* at col. 1, ll. 45–48. According to Angros, the hydrophobic



containment border “is substantially transparent and is substantially flush with the surface of the slide or plate[,] and [ ] covers only a portion of the surface of the slide or plate.” *Id.* at col. 1, l. 67–col. 2, l. 3.

Figure 1A of Angros is reproduced below:

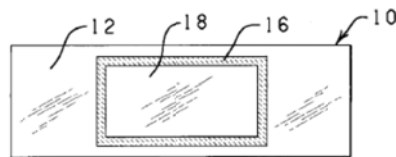


Figure 1A illustrates microscope slide 10 with containment border 16. *Id.* at col. 2, ll. 39–45. Containment border 16 surrounds containment area 18 of the upper surface 12 of slide 10, and prevents spreading, leakage, or migration of liquid from containment area 18. *Id.* at col. 2, ll. 49–58. Figure 1B of Angros is reproduced below:

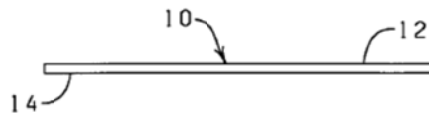


Figure 1B illustrates a side view of an analytic plate with a containment border, top surface 12, and lower surface 14. Angros discloses that “border 16 forms a molecular layer when dry and therefore is substantially flush (level) with the upper surface 12 of the slide 10. The border 16 is, therefore, not raised above the upper surface 12 to a degree that is visible to the naked eye.” Ex. 1005, col. 3, ll. 3–7.

## 2. Picken’s Disclosure

Picken describes a shelf assembly for use in a refrigerator. Ex. 1009, Abstract. Figure 1 of Picken is reproduced below:

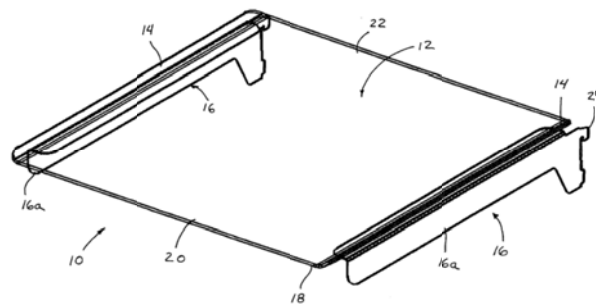


Figure 1 illustrates shelf assembly 10 with generally flat shelf panel 12 and a pair of support rails 16. *Id.* The shelf panel may include a curved, turned, or bent edge on the upper surface of the shelf to limit spillage of liquid over the edge of the shelf panel. Ex. 1009 ¶ 4. Figure 13 of Picken is reproduced below:

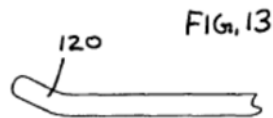


Figure 13 illustrates a shelf panel with forward edge 120 that curves upward to provide a spill-proof edge. *Id.* ¶ 55. An alternative embodiment disclosed by Picken is shown in Figure 17, reproduced below:

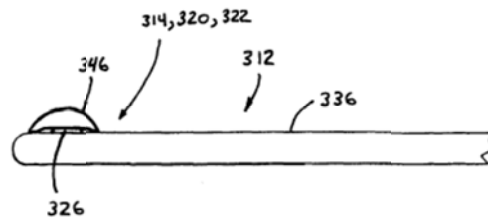


Figure 17 illustrates shelf panel 312 that includes an upper form or guard 346—bonded, via adhesive 326, along edge region 314 on upper surface 336 of shelf panel 312—to prevent liquid movement. *Id.* ¶ 57. The

shelf panel may include a frit layer<sup>2</sup> on the upper or lower surfaces of the panel. *Id.* ¶¶ 6, 57, 71.

### 3. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, 35 U.S.C. § 103 requires us to resolve the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere*, 383 U.S. 1, 17 (1966). “The importance of determining the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). “Instead of ascertaining what was subjectively obvious to the inventor at the time of invention, [we] must ascertain what would have been objectively obvious to one of ordinary skill in the art at such time.” *Id.* Thus, “the level of ordinary skill in the art is a factual question that must be resolved and considered.” *Id.*

#### a. Effective Filing Date of the ’561 Patent

In order for us to resolve the level of ordinary skill in the pertinent art at the time of the invention, we must determine the time of the claimed invention. The ’561 patent was filed on September 18, 2009 and is a continuation-in-part of Application No. PCT/US2009/048775, filed on June 2, 2009. The ’561 patent claims priority to two provisional applications: U.S. Prov. App. No. 61/133,273 (“the ’273 provisional”), filed June 27, 2008; and U.S. Prov. App. No. 61/216,540 (“the ’540 provisional”), filed May 18, 2009. Petitioner alleges that none of the claims of the ’561 patent

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<sup>2</sup> A frit layer is a substrate of glass or ceramic material that is placed or printed in a pattern. Ex. 1001, col. 6, ll. 7–13. The material can include finely ground particles. *Id.* at col. 6, ll. 41–59.

are entitled to the benefit of the filing dates of the provisional applications to which the '561 patent claims priority, because the written descriptions of the provisional applications fail to provide sufficient detail to support the challenged claims. Pet. 8. We are not persuaded by Petitioner's contentions. As discussed in detail below, we conclude that the '273 provisional application, which is the earlier filed of the two provisional applications, supports the claim elements recited in claims 1, 13, and 25. Therefore, the '561 patent is entitled to the June 27, 2008 filing date of the '273 provisional application, and the relevant time period for resolving the level of ordinary skill in the art is June 27, 2008.

i. Written description support for claims 1 and 13

Petitioner first contends that neither the '273 provisional nor the '540 provisional provides any explicit description of the top surface of the shelf panel, and therefore, the limitation of a "shelf panel having a generally flat top surface," as recited in claims 1 and 13, is not supported. Pet. 9–10 (citing Ex. 1002, pg. 33, l. 7–pg. 35, l. 22; Ex. 1003, pg. 35, l. 7–pg. 37, l. 22).<sup>3</sup> We disagree. Figure 44 of the '273 provisional application is reproduced below:

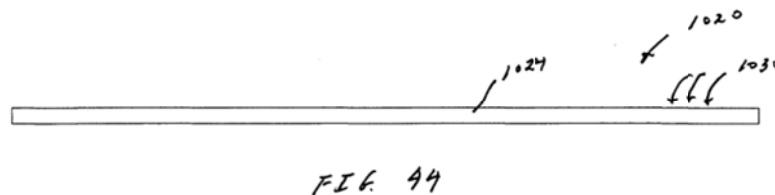


Figure 44 of the '273 provisional application illustrates a front view of a shelf panel claimed in application

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<sup>3</sup> When referring to the '273 provisional application (Ex. 1002) and the '540 provisional (Ex. 1003), we refer to the page numbers at the bottom right of each page.

Figure 44 illustrates a front, section view of shelf assembly 1020 and shelf panel 1024 of the claimed invention. Ex. 1002, Fig. 44. Shelf assembly 1020 is characterized as being treated with a hydrophobic or super hydrophobic material around the outer edges of shelf panel 1024. *Id.* at col. pg. 29, ll. 8–11. The hydrophobic material acts as a barrier for spilled liquid and prevents the liquid from spilling downward onto other surfaces. *Id.*

In contrast, a shelf panel used in the prior art is illustrated in Figure 42 of the '273 provisional application, reproduced below:



FIG. 42 (PRIOR ART)

Figure 42 of the '273 provisional application illustrates a front view of a shelf panel used in the prior art

Figure 42 is a front, section view of shelf assembly 1000 with shelf panel 1006 and plastic rim 1004. Plastic rim 1004 is used to encapsulate shelf panel 1006. *Id.* at pg. 28, ll. 17–21. The '273 provisional application specifically states “the visible edge of the shelf panel 1006 is located on its upper surface at the intersection of the perimeter of the plastic rim 1004, [and] may include a sealed edge 1014.” *Id.* at pg. 29, ll. 1–6. Using plastic rim 1004 and potentially sealed edge 1014, an attempt is made to essentially seal spilled liquid from spilling off shelf panel 1006. *Id.*

When Figure 44 is compared to Figure 42 of the '273 provisional application, the prior art figure has plastic rim 1004 that is used to prevent liquid movement off shelf panel 1006, while the top surface of shelf panel

1024 in Figure 44 does not have plastic rim 1004 and appears generally flat. Furthermore, the '273 provisional application states that “the hydrophobic or super hydrophobic surface treatments in accordance with the invention eliminate the need for any formed lips or ridges on the surface of the shelf panel” (*id.* at pg. 31, ll. 15–17), “in accordance with the invention, it should be noted that components such as a plastic rim (or even a frame) may be completely unnecessary with the use of the hydrophobic surface treatment 1030” (*id.* at pg. 29, l. 22–30, l. 1), and “[w]ith the use of this surface treatment in accordance with the invention, the need for plastic encapsulated material (e.g., the plastic which provides for a spill proof barrier in prior art systems) is eliminated” (*id.* at pg. 10, ll. 7–9). Therefore, we conclude that the '273 provisional application demonstrates support for the limitation, “shelf panel having a generally flat top surface,” as recited in claims 1 and 13.

Petitioner next contends that neither the '273 provisional application nor the '540 provisional application discloses a shelf panel where “the majority of the surface area of said top surface of the shelf panel is not hydrophobic,” and therefore, the limitation reciting the same in claims 1 and 13 is not supported. Pet. 10–11 (citing Ex. 1002, pg. 33, l. 7–pg. 35, l. 22; Ex. 1003, pg. 35, l. 7–pg. 37, l. 22). We disagree. The '273 provisional application states that in one embodiment, “the hydrophobic or super hydrophobic surface treatment is employed only around the top surface perimeter edge of the shelf panel 1024, for purposes of containing spills and acting as a spill proof barrier.” Ex. 1002, pg. 30, ll. 4–7. This disclosure is further supported by the illustration in Figure 43, where the hydrophobic

surface treatment, indicated by diagonal hash marks, is denoted only around the outer edge of shelf panel 1024. *Id.* at Fig. 43.

As construed above, the term “majority of the surface area of said top surface of the shelf panel is not hydrophobic” means that “the surface area of the non-hydrophobic portion is greater than the surface area of the hydrophobic portion.” The disclosure that in one embodiment only the outer perimeter edge is hydrophobic indicates that the entire inner portion of shelf panel 1024 is not hydrophobic. As the inner portion of shelf panel 1024 appears to be a greater amount compared to the perimeter edge of shelf panel 1024, we conclude there is disclosure in the ’273 provisional application that the majority of the surface area of said top surface of the shelf panel is not hydrophobic. Therefore, the ’273 provisional application supports said limitation in claims 1 and 13.

We have reviewed the ’273 provisional application and conclude that it provides written description support for all other limitations of claims 1 and 13.

ii. Written description support for claim 25

Petitioner contends that neither the ’273 provisional application nor the ’540 provisional application discloses any of the steps for manufacturing a shelf as recited in claim 25. Pet. 11. We disagree. The ’273 provisional application discloses: (1) multiple examples of applying a hydrophobic surface treatment (Ex. 1002, pg. 10, ll. 1–4); (2) examples of spill containment patterns (*id.* at pg. 9, ll. 16–23); (3) panels with generally flat top surfaces (*id.* at pg. 29, ll. 8–11, Fig. 44); (4) the construction of shelving assemblies (*id.* at pg. 11, l. 10–pg. 12, l. 9); and (5) leaving the majority of the surface on a top surface of a panel non-hydrophobic so that one or more

non-hydrophobic portions are bounded by hydrophobic surfaces (*id.* at pg. 9, ll. 16–23; Figs. 43, 44).

Petitioner lastly contends that neither provisional application discloses what is meant by “generally in the plane” of the top surface as recited in claim 25. Pet. 11–12. We disagree. The ’273 provisional application discloses that hydrophobic or super hydrophobic surface treatments in accordance with the invention eliminate the need for any formed lips or ridges on the surface of the shelf panel and that the relative amount of usable shelf space is increased by eliminating the space taken up by plastic encapsulation, sealants, adhesives, and formed lips and ridges. (Ex. 1002, pg. 31, ll. 15–19.) This disclosure indicates that the hydrophobic treatment does not create a lip or ridge that would use shelf space. Furthermore, Figure 44 of the ’273 provisional application illustrates a front, section view of shelf assembly 1020 and shelf panel 1024 of the claimed invention. *Id.* at Fig. 44. Shelf assembly 1020 has a hydrophobic surface treatment around the outer edges of shelf panel 1024. *Id.* at pg. 29, ll. 8–11. The hydrophobic material is not visible in Figure 44. Therefore, we conclude that the ’273 provisional application teaches what is meant by “generally in the plane” of the top surface as recited in claim 25.

We have reviewed the ’273 provisional application and conclude that it provides written description support for all other limitations of claim 25.

b. Determination of the Level of Ordinary Skill in the Art

Having determined the appropriate time of the invention (June 27, 2008), we turn to determining the level of ordinary skill in the art at that time. Petitioner’s witness, Mr. Chris B. Schechter, submitted a declaration in support of the Petition. Pet. 15 (citing Ex. 1010). In his declaration,



Mr. Schechter testified that a person of ordinary skill in the art relevant to the '561 patent “would have at least a bachelor’s degree in mechanical engineering and at least four years of experience designing and manufacturing shelf assemblies or equivalent education and training.” Ex. 1010 ¶ 4. Patent Owner’s witness, Mr. Richard Bruce Mills, defined a person of ordinary skill in the art relevant to the '561 patent to be a person with at least an associate’s or bachelor’s degree and three years of experience working with shelf assemblies, and having familiarity with “encapsulated spill containing refrigerator shelves.” Ex. 2022 ¶ 8. Based on our review of the '561 patent, the types of problems and solutions described in the '561 patent and cited prior art, and the testimony of the parties’ declarants, we conclude that a person of ordinary skill in the art at the time of the claimed invention (i.e., as of June 27, 2008, as discussed above in Section II.B.3.a.) would have had a degree in mechanical engineering or a similar discipline, and at least three years of work experience with refrigerator shelf assemblies. *See, e.g.*, Ex. 1001, col. 1, ll. 16–62 (stating that the '561 patent relates to “shelving which may be adapted for use with refrigerators,” and describing conventional refrigerator shelf assemblies that use plastic molded parts to encapsulate shelves and silicone sealants to form physical spill containment barriers around the perimeter of the refrigerator shelving); Ex. 1010 ¶¶ 1–2 (describing the background of Mr. Schechter); Ex. 2022 ¶¶ 3–5 (describing the background of Mr. Mills).

We note that under this standard, Petitioner’s witness, Mr. Schechter, does not qualify as a person of ordinary skill in the art. Although Mr. Schechter has a Master’s of Science degree in Mechanical Engineering, he has only worked as an engineer designing and manufacturing shelf

assemblies since December 2011. Ex. 1010 ¶¶ 1-2. Thus, Mr. Schechter had less than two years of experience when he signed his declaration on June 14, 2013. *Id.* ¶ 36. Furthermore, Mr. Schechter was not a person of ordinary skill in the art at the time of the invention of the '561 patent (i.e., June 27, 2008). Indeed, at his deposition, Mr. Schechter testified that he does not qualify as one of ordinary skill in the art under the definition in his declaration. Ex. 1011, 26:2–13. In this case, we accord the testimony of Mr. Schechter regarding the alleged obviousness of the claims less weight because he was not a person of ordinary skill in the art at the time of the invention disclosed in the '561 patent.

#### 4. Obviousness Analysis

To prevail in its challenges to the patentability of the claims, Petitioner must establish facts supporting its challenges by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). The primary dispositive fact Petitioner must establish is that Angros is analogous art to the claimed invention. A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). A reference qualifies as prior art for an obviousness determination under § 103 only when it is analogous to the claimed invention. *In re Klein*, 647 F.3d 1343, 1348 (Fed. Cir. 2011); *Innovation Toys, LLC v. MGA Entm't, Inc.*, 637 F.3d 1314, 1321 (Fed. Cir. 2011); *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004); *In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992).

A reference is considered analogous prior art: (1) if the reference is from the same field of endeavor as the claimed subjected matter, regardless of the problem addressed, or (2) if “the reference still is reasonably pertinent to the particular problem with which the inventor is involved,” even though the reference is not within the field of the inventor’s endeavor. *Bigio*, 381 F.3d at 1325. The “field of endeavor” test asks if the structure and function of the prior art is such that it would be considered by a person of ordinary skill in the art, because of the similarity to the structure and function of the claimed invention as disclosed in the application. *Id.* at 1325-27. It is necessary to apply “common sense” in “deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.” *Id.* at 1326 (citations and quotation marks omitted). As to the “reasonably pertinent” test:

A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor’s endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor’s attention in considering his problem. Thus, the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve. If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection. An inventor may well have been motivated to consider the reference when making his invention. If it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it.

*In re Clay*, 966 F.2d at 659.

The parties do not dispute that Angros’ disclosure regarding microscope slides is not in the same “field of endeavor” as the ’561 patent, which relates to refrigerator shelves. Pet. 21–22; PO Resp. 16; Reply 1;

Trans. 23:8–15, 32:10–14.

Rather, Petitioner contends Angros is analogous art to the claimed invention, because “Angros is reasonably pertinent to the problem faced by the Applicants of the ’561 patent.” Pet. 22. Specifically, Petitioner states that “[t]he problem faced by the Angros inventors was the same as the problem faced by [Patent Owner], namely, how to contain a liquid in a predetermined area using a structure that is thin and does not extend significantly above the top surface of the panel.” *Id.*

Patent Owner disputes that Angros is reasonably pertinent to the problem addressed by the claimed invention, because Angros does not teach containing “spills.” PO Resp. 16. According to Patent Owner, the problem faced by the inventors of the ’561 patent was not simply how to contain liquids in a predetermined area—it was how to maximize the available storage space on shelves *while containing accidental and unpredictable spills*. *Id.* (citing Ex. 2022 ¶ 30(b)) (emphasis added). Mr. Mills, a former employee of Whirlpool Corporation and witness for Patent Owner, testified that “the hydrophobic border in Angros is *not* being used to contain spills or to otherwise provide a spill resistant barrier, which is the problem being addressed by the [’]561 patent.” Ex. 2022 ¶ 30(b).

Petitioner, however, argues that the term “spill” is not limited by the ’561 patent to encompass only unintended, sudden, unexpected, or violent releases of liquid on a surface. Trans. 10:14–24, 18:9–12. Petitioner’s argument is unpersuasive in light of our claim construction of the term “spill.” As discussed above in Section II.A.2, we construed “spill” to mean “an accidental or unintentional release of liquid.”

Petitioner further argues “Patent Owner is trying to read too much into the concept of spill,” because the ’561 patent does not claim “spill containment.” Reply 1–2; Trans. 18:9–23. Although the claims do not recite a limitation for maximizing shelf space, the claims do require a “spill containment” pattern. Such a requirement indicates the claims are directed not merely to liquid containment, but to “spill containment.” Angros, however, is directed to the containment of miniscule amounts of liquids that are *intentionally* placed on a microscope slide. Petitioner’s argument regarding a “spill” encompassing a “slowly and carefully” poured liquid (Reply 1–2) fails to address sufficiently Patent Owner’s argument that the problem pertinent to the inventors of the ’561 patent is “not simply how to contain liquids in a predetermined area – it was how to maximize the available storage space . . . *while containing accidental and unpredictable spills.*” PO Resp. 16–17 (emphasis added).

Patent Owner’s position is supported by the testimony of Mr. Mills as well as the disclosure of the ’561 patent itself. *See, e.g.*, Ex. 2022 ¶¶ 26–33; Ex. 1001, Abstract (“a method for containing spills on shelving and the like”); col. 1, l. 24–col. 2, l. 14 (describing prior art shelves and the objects of the disclosed “method for containing spills on shelving and the like”); col. 11, ll. 44–49 (“[C]omponents such as a plastic rim (or even a frame) may be completely unnecessary with the use of the hydrophobic surface 1030 to provide the spill containment feature. As such, the shelf assembly 1020 depicted in FIGS. 3 and 4 maximizes the available useful shelf space since it does not include a plastic rim, a frame, or any other physical barrier or dam extending above the top surface 1023 of the shelf panel 1024 for preventing liquids from spilling off of the shelf panel 1024.”); col. 13, ll. 51–56.

Therefore, we agree with Patent Owner's representation of the problem being addressed by the '561 patent. Specifically, we determine that the hydrophobic spill-containment perimeter on refrigerator shelves of the '561 patent is designed to contain accidentally spilled liquid and thereby maximize available storage space, whereas the microscope slides of Angros are designed to contain miniscule amounts of intentionally placed liquid.

Patent Owner also disputes that Angros is analogous art to the claimed invention, arguing that a person having ordinary skill in the art of the '561 patent would not have considered Angros' microscope slides when developing a spill-containing shelf for refrigerators, freezers, pantries, etc. PO Resp. at 14–16; Ex. 2022 ¶¶ 30–33. According to Patent Owner's declarant, Mr. Mills, a person of ordinary skill in the art of the '561 patent would not have been familiar with microscope slides and would not have considered them a design resource. Ex. 2022 ¶ 26.

Mr. Schechter, an employee of, and witness for, Petitioner, corroborates the testimony of Mr. Mills. Ex. 1011, 79:4–113:2. Mr. Schechter testified that during the course of his work for Petitioner, he familiarized himself with the state of the art by reviewing “patents focused primarily on the consumer appliance industry” (*id.* at 78:19–79:15) and occasionally reviewed technical publications, technical data sheets, and manuals for production equipment (*id.* at 79:16–81:1). Mr. Schechter, however, testified that microscope slides are not something with which he works in his work for Petitioner, and could not recall any instance where he reviewed patents or publications (other than Angros) related to microscopes. PO Resp. 15 (citing Ex. 1011, 112:12–113:2). In fact, Mr. Schechter testified he did not find Angros during a prior art search; rather, it was given

to him by legal counsel. Ex. 1011, 92:1–4. We credit the testimony of both Mr. Schechter and Mr. Mills. We also note that unlike Patent Owner’s citation to Mr. Mills’ testimony, Petitioner does not cite any testimony (from Mr. Schechter or otherwise) stating that Angros is analogous art to the ’561 patent or explaining why that would be the case. Thus, based on the evidence of record, we are persuaded that one of ordinary skill in the art of the ’561 patent would not have considered the subject matter of Angros, which deals with microscope slides, to be reasonably pertinent to the problem being addressed by the applicants of the ’561 patent in designing refrigerator shelves. Therefore, Petitioner has not shown Angros to be prior art under 35 U.S.C. § 103.

In addition, even if Angros did qualify as prior art, Petitioner has not shown that the combination of Angros with Picken would have rendered claims 1 and 25 obvious. Petitioner argues it would have been obvious to one of skill in the art to modify the shelf panel, as taught by Picken, with the hydrophobic liquid containment barrier, as taught by Angros, because “the application of the spill-containment border of Angros to the shelf assembly of Picken is nothing more than the predictable use of prior art elements according to their established functions.” Pet. 22–23 (citing *KSR Int’l Co.*, 550 U.S. at 417). According to Petitioner, merely substituting one element (e.g., guard 346 of Picken) for another element known in the field (hydrophobic containment border of Angros) would have been obvious to one of skill in the art and it would have been expected to yield predictable results. *Id.*

Petitioner relies on testimony from Patent Owner’s declarant, Mr. Mills, to allegedly establish that “scaling up” and substituting elements

from a microscope slide to a refrigerator shelf would have been obvious and easily performed by those in the field. Reply 2; Trans. 14:1–11, 24:16–25:23; Ex. 1017, 248–249. We are not persuaded Mr. Mills made the admission that Petitioner argues. The questions Petitioner cites appear to be directed to (1) whether a frit layer would make a hydrophobic surface work better, and (2) if, hypothetically, a microscope were scaled up, whether it would retain liquid. Trans. 14:1–11; Ex. 1017, 248–249.

We are not persuaded by Petitioner’s argument that the application of Angros’ spill-containment border is merely the predictable use of prior art elements, because we do not find Angros to be analogous art to Picken. Although it may be obvious for one of skill in the art to “[make a] simple substitution of one known element for another” (*KSR Int’l Co.*, 550 U.S. at 417), the element must be familiar or known to the person of ordinary skill in the art to be used in the substitution. Based on the testimony of record, we do not find that a person of ordinary skill in the art of the ’561 patent would be familiar with items related to microscope slides.

Furthermore, a patent claim “is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co.*, 550 U.S. at 419. “Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.” *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011) (citing *KSR Int’l Co.*, 550 U.S. at 421). For an obviousness analysis, “it can be important to identify a reason that would have prompted one of skill in the art to combine prior art elements in the way the claimed invention does.”



*KSR Int'l Co.*, 550 U.S. at 419. In that regard, Mr. Schechter, witness for Petitioner, testified that Angros and Picken were known in the art and that one of ordinary skill in the art would have been motivated to combine the teachings of the prior art so as to make a design that (i) was more simple or clean or aesthetically pleasing and (ii) had a less obtrusive hydrophobic barrier. Ex. 2048, 226:15–227:8; Ex. 1010 ¶ 28. He then concluded that one of ordinary skill would know how to substitute the spill-contain border in Angros for the plastic guard in Picken. Ex. 1010 ¶¶ 28–29.

Mr. Schechter, however, does not explain sufficiently why a person of ordinary skill in the art would look to the field of microscope slides to find a hydrophobic coating to act as a less obtrusive spill containment border in place of the plastic rim in Picken. Mr. Schechter's testimony is impermissible hindsight; he opined that all of the elements of the claims disparately existed in the prior art, but fails to provide sufficient reason for why one of ordinary skill in the art at the time of filing would have combined these references. *See, e.g., InTouch Techs., Inc. v. VGO Commc'ns, Inc.*, 751 F.3d 1327, 1348–49 (Fed. Cir. 2014) (holding expert testimony to be impermissible hindsight for failing to explaining what reason or motivation one of ordinary skill in the art at the time of the invention would have had to place the prior art together).

In an obviousness determination, we must avoid analyzing the prior art through the prism of hindsight. Instead, we must “cast our minds back to the time the invention was made (often, as here, many years), to occupy the mind of one skilled in the art who is presented only with the references, and who is normally guided by the then–accepted wisdom in the art.” *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553 (Fed. Cir. 1983).

Petitioner attempts to imbue one of ordinary skill in the art with knowledge of the claimed invention, when no prior art reference or references of record convey or suggest that knowledge. Rather, Petitioner's argument that Angros is analogous art and that Angros is combinable with Picken appears to be premised on Petitioner's knowledge of the '561 patent disclosure.

Petitioner bears the burden of showing by a preponderance of evidence that the asserted prior art references are analogous art and otherwise combinable. On the record before us, we find that Petitioner has not shown that Angros qualifies as prior art under 35 U.S.C. § 103 or that, even if it did, it renders the claims unpatentable in combination with Picken. Therefore, we conclude Petitioner has not demonstrated by a preponderance of evidence that claims 1 and 25 of the '561 patent would have been obvious in view of Angros and Picken.

*C. Claim 13 – Alleged Obviousness over Angros, Picken, and Baumann*

Petitioner alleges that claim 13 of the '561 patent is unpatentable under 35 U.S.C. § 103(a) over (i) Angros and Baumann and (ii) Picken and Baumann. Pet. 51. Although Petitioner in its Petition did not allege, expressly, unpatentability of claim 13 based on the combination of all three references (Angros, Picken, and Baumann), we determined, in our Decision to Institute, under 35 U.S.C. § 314(a) that the information presented in the Petition showed a reasonable likelihood that claim 13 would have been obvious based on the combination of Angros, Picken, and Baumann, and instituted a trial on that ground. Dec. to Inst. 15–17.

Patent Owner disputes this ground, arguing that Baumann is non-analogous art to the claimed invention and cannot be used to establish obviousness. PO Resp. 21.

As discussed above, we are persuaded by Patent Owner's reasoning regarding Angros being non-analogous art; thus, Angros cannot be used in combination with other references (including Baumann) to support a showing of obviousness. Therefore, we determine that Petitioner has not shown by a preponderance of the evidence that claim 13 is unpatentable as obvious over Angros, Picken, and Baumann.

1. Baumann's Disclosure

Baumann describes substrates with at least one structured hydrophobic substrate that "provides a good self-cleaning effect." Ex. 1007, col. 1, ll. 9–11. In one embodiment disclosed by Baumann, the substrate is a ceramic material that is coated with "a composition containing a material producing a glass flux such as a glass frit and structure-forming particles" and that, when the "substrate" is fired at a certain temperature, the glass flux is made hydrophobic. *Id.* at col. 2, ll. 32–39. Baumann further discloses a

micro-rough layer [that] is printed by means of a printing paste containing a glass frit which forms a glass flux, and the structure-forming particles are applied to the still moist printing surface for example by powdering or dripping on, possibly followed by partial pressing of the particles into the printed surface.

*Id.* at col. 6, ll. 1–8. "The substrate thus treated is then burnt and made hydrophobic in a known manner." *Id.* at col. 6, ll. 6–8.

2. Angros's and Picken's Disclosures

The disclosure of Angros and Pickens are discussed in detail above in Sections II.B.1. and II.B.2.

3. Analysis

Claim 13 depends from claim 1, and in addition to the elements recited in claim 1, claim 13 requires (a) a ceramic frit layer adjacent to and

bonded to the top surface of a shelf panel and (b) a hydrophobic compound coated over the ceramic frit layer.

Petitioner contends that ceramic frits coated with hydrophobic surfaces were well known in the art at the time the '561 patent was filed. Pet. 27. Indeed, the '561 patent cites to Baumann as disclosing a ceramic frit. *Id.*; see Ex. 1001, col. 7, ll. 36–41. According to Petitioner, the application of a hydrophobic surface comprising a ceramic frit and a hydrophobic compound, as described in Baumann, to form a spill-containment border, as described in Angros, would be the predictable use of prior art elements according to their established functions. Pet. at 28 (citing *KSR Int'l. Co.*, 550 U.S. at 417). Petitioner then contends that, if the border described in Picken was substituted with the hydrophobic surfaces described in Baumann, a person of ordinary skill in the art would expect that the shelf assembly of claim 13 would result. Pet. 28–29 (citing Ex. 1010 ¶ 35).

Patent Owner disputes Petitioner's position, asserting that Baumann is non-analogous art that is neither from the same field of endeavor as the '561 patent, nor is it "reasonably pertinent" to the problem faced by the inventors of the '561 patent. PO Resp. 22. According to Patent Owner, Baumann is directed to self-cleaning substrates suitable "for glazing vehicles and trains and for glass bricks," as well as "building material such as roof tiles, clinker and floor tiles." Ex. 1007, col. 6, l. 62–col. 7, l. 3. Thus, Patent Owner concludes Baumann is in a different field of endeavor from the '561 patent, which is directed to refrigerator shelves. PO Resp. 22.

Patent Owner also contends that Baumann is non-analogous art, because it is directed to a much different problem than that faced by the inventors of the '561 patent. Specifically, Patent Owner characterizes

Baumann as providing a substrate that eliminates water and dirt that may otherwise collect thereon. PO Resp. 23 (citing Ex. 2022 ¶¶ 37–38; Ex. 1007, col. 2, l. 64–col. 3, l. 1). According to Patent Owner, Baumann’s intended objective is directly opposite that of the ’561 patent, which is to contain spills, not to eliminate them from the shelf. PO Resp. 23.

In the Decision to Institute, we instituted on the combination of Angros, Picken, and Baumann (Dec. to Inst. 15–17), because the combination of Picken and Baumann lacks a suggestion to create a hydrophobic barrier wherein the majority of the top surface of shelving assembly is not hydrophobic. We further found a reasonable likelihood that the feature is taught by the combination of Angros’s rectangular hydrophobic surface and Picken’s shelf structure. *Id.* at 12–14. The hydrophobic coating disclosed in Baumann is designed to coat an entire top surface of an article to create a self-cleaning surface that facilitates liquid run-off. Ex. 1007, col. 2, l. 64–col. 3, l. 1. Based on the disclosure in Baumann, we conclude that the combination of Picken and Baumann would result in a refrigerator shelf, as disclosed in Picken, with its entire top surface treated with Baumann’s self-cleaning coating. The raised form would remain, because there is no suggestion that the coating of Baumann could perform spill containment. Therefore, Petitioner can rely only on the disclosure in Angros for a hydrophobic barrier that would not coat the entire top surface of a shelving assembly.

As discussed in detail above, however, we already have concluded that Petitioner has not shown Angros to be reasonably pertinent to the problem addressed by the challenged claims. Such a deficiency defeats Petitioner’s obviousness challenge as to claim 13 and is not remedied by the

combination of Angros, Picken, and Baumann. Therefore, we determine Petitioner has not demonstrated by a preponderance of the evidence that claim 13 of the '561 patent would have been obvious over Angros, Picken, and Baumann.

*D. Secondary Considerations of Non-Obviousness*

Patent Owner contends Petitioner has failed to meet its burden of showing unpatentability, because objective indicia of nonobviousness indicate that the claimed subject matter would not have been obvious. PO Resp. 31–43; Trans. 29. As discussed above, we have found Angros to be non-analogous and not combinable with the other references. Thus, we need not address Patent Owner's evidence regarding secondary considerations of non-obviousness.

*E. Motion to Exclude*

Petitioner moves to exclude the following evidence submitted by Patent Owner in this proceeding: Exhibits 2006–16, 2025, 2034–39, 2042–46, 2049–51, 2053, 2020 (¶¶ 12–17, 19–22, and 25–39), and 2022 (¶¶ 17–21). Papers 86 (confidential), 87 (public). Patent Owner filed an opposition (Paper 90 (confidential); Paper 91 (public)), and Petitioner filed a reply (Paper 94 (confidential); Paper 95 (public)). All of the evidence sought to be excluded by Petitioner pertains to Patent Owner's assertions of secondary considerations of non-obviousness. Because we need not reach that issue, for the reasons explained above, Petitioner's motion is dismissed as moot.

### III. CONCLUSION

We have considered the record before us in this *inter partes* review proceeding. We conclude Petitioner has not proven by a preponderance of the evidence that:

- (1) The subject matter of claims 1 and 25 of the '561 patent is unpatentable under 35 U.S.C. § 103 over the teachings of Angros and Picken; and
- (2) The subject matter of claim 13 of the '561 patent is unpatentable under 35 U.S.C. § 103 over the teachings of Angros, Picken, and Baumann.

### IV. ORDER

For the reasons given, it is hereby:

ORDERED that Petitioner has not shown by a preponderance of the evidence that claims 1, 13, and 25 of the '561 patent are unpatentable;

FURTHER ORDERED that Petitioner's motion to exclude (Paper 86 (confidential); Paper 87 (public)) is *dismissed*;

FURTHER ORDERED that Petitioner's objections (Paper 98, 103) and Patent Owner's objections (Paper 101) to the opposing party's demonstrative exhibits to be used at the oral hearing are *dismissed*; and

FURTHER ORDERED that because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

Certain materials have been sealed in this proceeding, but have not been relied upon in this final written decision. *See* Papers 76, 97. The record will be maintained undisturbed pending the outcome of any appeal taken from this decision. At the conclusion of any appeal proceeding, or if

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no appeal is taken, the materials will be made public. *See* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,760-61 (Aug. 14, 2012). Further, either party may file a motion to expunge the sealed materials from the record pursuant to 37 C.F.R. § 42.56. Any such motion will be decided after the conclusion of any appeal proceeding or the expiration of the time period for appealing.



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