

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TANDUS FLOORING, INC.,
Petitioner,

v.

INTERFACE, INC.,
Patent Owner.

Case IPR2013-00527
Patent 8,434,282 B2

Before MIRIAM L. QUINN, BRIAN J. McNAMARA, and
TRENTON A. WARD, *Administrative Patent Judges*.

QUINN, *Administrative Patent Judge*.

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

I. BACKGROUND

Tandus Flooring, Inc. (“Petitioner”) filed a Petition to institute an *inter partes* review of all the claims, claims 1–14 (the “challenged claims”), of U.S. Patent No. 8,434,282 (“the ’282 patent”). Paper 4 (“Pet.”). We instituted trial for all asserted claims. Paper 12 (“Dec. on Inst.”). Although Petitioner asserted a multitude of grounds of unpatentability, we instituted trial of the challenged claims based only on the following grounds:

Claims	Basis	Reference[s]
1, 2, 5–7, and 9	§ 102	Pacione ¹
3 and 8	§ 103	Pacione and Robinson ²
1, 2, 5–7, and 9–14	§ 103	Kinoshita ³ and Pacione
3 and 8	§ 103	Kinoshita, Pacione, and Robinson
4	§ 103	Kinoshita, Pacione, and Matthews ⁴

During trial, Interface, Inc. (“Patent Owner”) filed a Patent Owner Response, addressing the asserted anticipation and obviousness grounds. Paper 24 (“PO Resp.”). Patent Owner also filed a contingent Motion to Amend, which seeks to substitute proposed claim 15 should claim 1 be found unpatentable. Paper 26 (“Mot. to Amend”). Petitioner replied to Patent Owner’s Response (Paper 33 (“Pet. Reply”)) and responded to Patent Owner’s Motion to Amend (Paper 35

¹ US 6,298,624 B1 issued Oct. 9, 2001 (Ex. 1006) (“Pacione”).

² US 3,241,662 issued Mar. 22, 1966 (Ex. 1014) (“Robinson”).

³ JP H5-163825 published June 29, 1993 (Ex. 1007) (“Kinoshita”); Citations in this Decision to Kinoshita are to the certified English translation of that Japanese document, which is included also in Exhibit 1007.

⁴ WO 99/55792 published Nov. 4, 1999 (Ex. 1011) (“Matthews”).

(“Opp. to Mot. to Amend”). Both parties requested the opportunity to present oral argument. A hearing was held on November 13, 2014, and a transcript of that hearing is part of the record. Paper 47 (“Tr.”).

For the reasons that follow, we determine the Petitioner has demonstrated by a preponderance of the evidence that claims 1–14 of the ’282 patent are unpatentable. Furthermore, Patent Owner’s request for entry of substitute claim 15 is denied.

A. RELATED PROCEEDINGS

The ’282 patent is related to U.S. Patent No. 8,381,473, which was the subject of an *inter partes* review (IPR2013-00333) that has concluded. In that proceeding, the panel issued a final written decision. *See Tandus Flooring, Inc. v. Interface, Inc.*, Case IPR2013-00333 (PTAB Dec. 8, 2014) (Paper 67).

B. THE ’282 PATENT (EX. 1001)

The ’282 patent generally relates to systems and methods for installing floor coverings, particularly carpet tile and other modular floor coverings. Ex. 1001, 1:24–26. One embodiment described in the ’282 patent involves using connectors to install floor tiles, where each connector includes an adhesive layer that contacts the underside of adjacent tiles and connects the tiles together to form the floor covering. *Id.* at 4:62–5:4. The patent illustrates the tile installation using said connectors as shown in Figure 5, reproduced below with annotations.

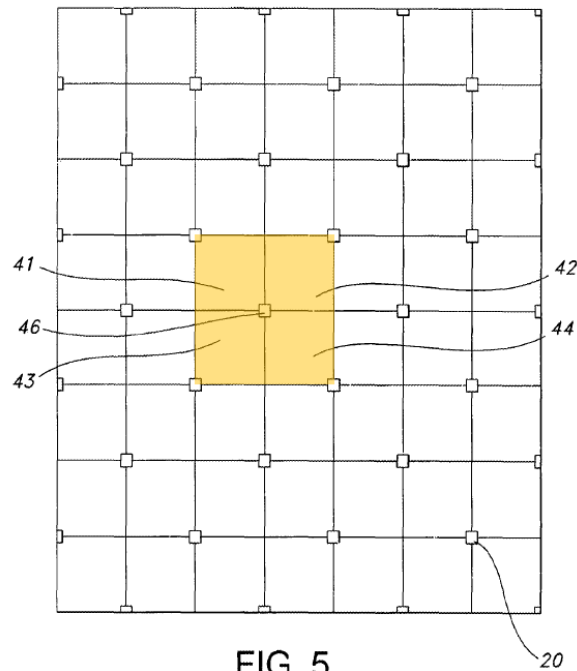


Figure 5, above, is annotated in orange to illustrate a unit of four tiles in the embodiment of a conventional installation in which central connector 46 connects the four tiles at the corners where they intersect. *Id.* at 8:61–66. To facilitate rapid floor installation, the '282 patent describes that the connector includes a film that is stiff, typically with greater stiffness than most adhesive tapes that curl or droop down from the underside of a tile. *Id.* at 5:9–11, 16–20. The connector, thus, projects beyond the edge of the tile, facilitating proper positioning. The '282 patent further contemplates adhesives exhibiting “sufficient [shear] strength to prevent the tiles from moving relative to the connectors or each other and thereby creating gaps between adjacent tiles after installation.” *Id.* at 7:6–9.

C. ILLUSTRATIVE CLAIM

Challenged claim 1 is the sole independent claim at issue. It is reproduced below, as illustrative of the claimed subject matter:

1. A system for installing carpet tiles on an underlying surface, the system comprising:

a plurality of carpet tiles, wherein each carpet tile comprises an underside;
and

a plurality of carpet tile connectors for connecting the plurality of carpet tiles, each carpet tile connector comprising:

a film having two sides; and

a layer of adhesive located on a side of the film, wherein the layer of adhesive is capable of forming a bond between the film and the undersides of adjacent carpet tiles and comprises a sufficient shear strength so that, when a connector spans adjacent edges of the adjacent carpet tiles so that the layer of adhesive contacts the undersides of the adjacent carpet tiles, the connector prevents adjacent tiles from moving relative to the connector or each other thereby creating gaps between the adjacent tiles after installation,

wherein the film comprises a plastic material sufficiently stiff for a connector positioned partly in contact with an underside of a carpet tile to project beyond the edge of the carpet tile in roughly the same plane as the underside of the carpet tile.

II. ANALYSIS

A. CLAIM CONSTRUCTION

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b). Claim terms also are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). We must be careful not to read a particular embodiment appearing in the written description into the claim if the claim language is broader than the embodiment. *See In re Van Geuns*, 988 F.2d

1181, 1184 (Fed. Cir. 1993) (“limitations are not to be read into the claims from the specification”).

In the Decision on Institution, we interpreted one term, “sufficient shear strength” to mean “adequate capacity to resist shear.” Dec. on Inst. 7–9. Patent Owner challenges our construction of the “sufficient shear strength” limitation and raises an issue of claim construction we did not address in our Decision on Institution: the scope of the term “connectors.” PO Resp. 12–17. Patent Owner raises the issue of claim scope of dependent claim 14 where it urges that the claim requires a series of steps to be performed in a specific sequence. *Id.* at 17–19. We analyze each issue in turn.

1. “*sufficient shear strength*” limitation (*Claim 1*)

The claim recites that “the layer of adhesive . . . comprises a sufficient shear strength so that . . . the connector prevents adjacent tiles from moving relative to the connector or each other.” Ex. 1001, 10:26–35. Patent Owner argues that “sufficient shear strength” relates only to the ability of the adhesive to prevent lateral movement. PO Resp. 15. We concluded in our Decision on Institution that by reciting “sufficient shear strength,” the claims are not limited to preventing only *lateral* movement and *lateral* gaps. Dec. on Inst. 7–9. Patent Owner proffers witness testimony, however, in support of its argument that “shear strength” relates to preventing lateral movement, whereas “peel strength” relates to lifting, i.e., vertical movement. PO Resp. 15 (citing Ex. 2014 ¶¶ 81–91; Ex. 2017 ¶¶ 81–92; Ex. 2012, 88:14–25, 90:24–91:4). Patent Owner also states that the word “gap” is a “term of art” in the carpet tile industry, and that recitation of “gap” in claim 1 refers to lateral separation between the edges of the tiles. *Id.* at 16–17 (citing Ex. 2014 ¶¶ 54, 90; Ex. 2017 ¶¶ 53, 91).

We are not persuaded by Patent Owner’s arguments because the claim language and specification of the ’282 patent do not support the proffered contention that the claims are limited to preventing only *lateral* movement. The claim language is paramount to our analysis. The claim recites, first, “shear strength” distinctly from, second, “prevent[ing] . . . moving *relative to the connector* or each other” (emphasis added). Although these two features are functionally related, in the context of claim 1 the first feature cannot redefine or rewrite the second feature. That is, even if the customary understanding of “shear strength” focused solely on a plane parallel to the flooring surface, i.e. strength in the horizontal or lateral direction, the claim expressly recites preventing *relative* movement, which is a broad term that encompasses movement other than *lateral* movement.

Not only does the claim language foreclose narrowing the claims as Patent Owner argues, but the specification gives no indication that the ordinary and customary meaning of an adhesive layer with sufficient “shear strength” would prevent only lateral movement or lateral gaps. To be clear, the specification does not define “shear strength.” Similarly, the specification is silent regarding a definition for “creating gaps,” such that a “gap” could be interpreted clearly as meaning only a *lateral* gap. Neither does Patent Owner argue that any definition for these terms is provided expressly in the specification. Instead, Patent Owner argues that: (1) “[t]he experts in this case agree” on the “shear strength” limitation preventing lateral movement; and (2) the word “gap” is a “term of art” referring to lateral separation between tile edges. PO Resp. 15–17.

Regarding the term “shear strength,” Patent Owner does not show that our construction of “shear strength”—“adequate capacity to resist shear”—is in error.

Patent Owner's argument focuses on whether the adequate capacity to resist shear concerns only the prevention of lateral movement. *Id.* In support of that argument, Patent Owner relies on extrinsic evidence in the form of witness testimony regarding whether lateral movement, but not vertical movement, is understood by person of ordinary skill in the art as the meaning of shear strength. *See, e.g.,* Wood Decl., Ex. 2017 ¶¶ 81–92 (stating that it makes no sense to construe “shear strength” as preventing anything other than lateral movement, because the industry knew how to keep tiles lying flat and that the patent only further supports prevention of lateral movement by referring to “gaps”); Endrenyi Decl., Ex. 2014 ¶¶ 81–90 (stating the same as Mr. Wood); Deposition of Dr. Tippett, Ex. 2012, 88:14–25 (testifying of development of shear strength test of a carpet tile to determine the force used to move a carpet laterally). But as stated above, the claim expressly recites the relative movement broadly, without limiting that movement to any direction.

Furthermore, the witness testimony is unpersuasive. In particular, we note the flaw in the argument that if the claim had meant to preclude vertical movement, in addition to lateral movement, the claim language would reference the peel strength of the adhesive. *See* Ex. 2014 ¶ 88. The omission of peel strength in the claim language is not evidence that the claim excludes preventing vertical movement, such as that caused by peeling off. Failing to restrict the recited “movement” of the tiles to lateral movement results in a claim broad enough to encompass both vertical and lateral movement, notwithstanding that the strength of the adhesive is directed expressly to resist shear, or lateral forces.

With regard to the meaning of “gap,” all of the testimony relied on to support Patent Owner's argument on this point is opinion evidence, without

supporting facts or explanation of how the specification supports such an opinion. *See, e.g.*, PO Resp. 16–17; Endrenyi Decl., Ex. 2014 ¶ 53 (stating that “gapping” and “buckling” are “terms of art in the industry that refer to consequences of adjacent tiles moving laterally on the floor so that adjacent edges of the tiles no longer abut”); Wood Decl., Ex. 2017 ¶ 53 (“‘[g]apping’ is an industry term that refers to lateral separation of adjacent tile edges”); *but see* Deposition of Dr. Tippett, Ex. 2012, 76:12–77:15 (referring, during Dr. Tippett’s cross-examination, to horizontal gaps and vertical gaps known at the time of the invention, 2004). The testimony relied on by Patent Owner to support its argument is unpersuasive. First, the specification neither refers to “gapping” nor states (nor implies that) the word “gap” is directed solely to tiles moving laterally relative to the connector or another tile. Indeed, the specification uses the word “gap” generally. Two of those uses appear in the Background of the Invention describing problems with tape having a low tensile strength and inelasticity. *See* Ex. 1001, 2:48–51, 3:15–21. A third use, also in the Background of the Invention, describes problems with indirect attachment methods where “tiles are more likely to move relative to each other and thereby create gaps in the installation.” *Id.* at 3:1–4. This statement is particularly enlightening because in comparison with other statements referring to gaps formed between adjacent tiles, this statement refers to gaps more generally, i.e. “gaps in the installation.” The fourth use of the word “gap” repeats *verbatim* the claim language concerning “shear strength,” and, therefore, provides no further insight as to the use of the word. *See id.* at 7:6–9. Review of these broad statements in the specification reveals that there is no express intent of using “gap” in the sense of meaning *only a lateral gap*.

Furthermore, other than the conclusory assertions of Patent Owner's Declarants, Messrs. Wood and Endrenyi, there is insufficient factual support for the assertion that the word "gap," commonly understood to mean an opening or a space,⁵ was, at the time of the invention, a "term of art" in the carpet tile industry referring solely to *lateral* separation between tiles. Indeed, a named inventor of the '282 patent, Mr. Keith Gray, has averred that: "[t]he word 'gap' is not a term of art in the carpet tile industry. End users, installers, dealers, and others use the word as a general description of a problem with adjacent tiles coming apart in any direction." Ex. 1037 ¶ 22.⁶

On the whole, we are not persuaded that the ordinary and customary meaning, under the broadest reasonable interpretation, of the "shear strength" limitation is limited to *lateral* movement or *lateral* gaps, because there is insufficient evidence that such a narrow interpretation is appropriate. *See E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1368 (Fed. Cir. 2003) (Where no explicit definition for the term "electronic multi-function card" was given in the specification, this term should be given its ordinary meaning and broadest reasonable interpretation; the term should not be limited to the industry standard

⁵ *See, e.g.*, Ex. 1020 (*Definition gap*, MERRIAM-WEBSTER DICTIONARY ("a space between two people or things")).

⁶ *See* Ex. 2040, 102:3–104:19. We note Patent Owner contends that Mr. Gray's testimony is biased and contradictory. Paper 40, PO Mot. for Observations 2, 7. We also note that Petitioner responded to these contentions by showing testimony regarding the level of knowledge of Mr. Gray and that the testimony is consistent with Petitioner's allegations that the word "gap" includes lateral separation, but does not exclude vertical separation. Paper 43, Pet. Resp. to PO Mot. for Observations 1–2, 8–9. We have taken Patent Owner's contentions and Petitioner's response into consideration when determining the weight accorded to Mr. Gray's testimony.

definition of credit card where there is no suggestion that this definition applies to the electronic multi-function card as claimed, and should not be limited to preferred embodiments in the specification.).

Turning to the disputed claim language, as we stated in our Decision on Institution, we determine that the word “sufficient” introduces a relative amount to the recited “shear strength.” The phrase “shear strength” is the capacity of a material to resist shear.⁷ And “shear” is “a strain resulting from applied forces that cause or tend to cause contiguous parts of a body to slide relatively to each other in a direction parallel to their plane of contact.”⁸ Applying the plain and ordinary meaning to the claim language, therefore, the layer of adhesive must have the adequate capacity *to resist* shear. The layer’s capacity, however, does not narrow the claimed function of including such a layer in the connector *to prevent only* lateral movement of adjacent tiles and lateral gaps from forming after installation. The plain language of the claims confirms this interpretation because the result of providing the “sufficient shear strength” at the adhesive layer is to prevent adjacent tiles from moving relative to the connector *or each other*. This claim language indicates that abutting tile edges are prevented from moving “in a direction parallel” to the plane of contact—which would include both lateral and vertical movement. For example, lifting may be prevented when providing a resistance to

⁷ *Definition shear strength*, WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY, UNABRIDGED (1993), available at <http://lionreference.chadwyck.com> (Dictionaries/Webster’s Dictionary) (Exhibit 3001).

⁸ *Definition shear 5(a)*, WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY, UNABRIDGED (1993), available at <http://lionreference.chadwyck.com> (Dictionaries/Webster’s Dictionary) (Exhibit 3002).

shear sufficient to allow for the horizontal strain caused by suction, traffic, and any other dragging force.

Accordingly, we construe “sufficient shear strength” to mean “adequate capacity to resist shear.”

2. “connector”

Patent Owner contends that the recited “connector” is smaller than the carpet tiles that it connects. PO Resp. 12–14. In support of this contention, Patent Owner points out that every depiction of the “connector” in the Figures is consistent with this position. *Id.* at 13. We address each of Patent Owner’s arguments in turn.

First, claim 1 recites the connector without restricting its surface area or size in any way. At best, the claim recites that the connectors are “for connecting the plurality of carpet tiles” and are positioned to “span[] adjacent edges of the adjacent carpet tiles.” This claim language does not suggest that the connector’s surface area must be smaller than that of the tile. Indeed, a connector, with a surface area the same as or larger than the tile, may meet this limitation so long as “a connector” is positioned as claimed. Moreover, the ’282 patent includes a claim depending from claim 1 addressing surface area limitations of a connector. *See, e.g.*, claim 9 (requiring that the connector has a surface area of approximately 9 inches square). Patent Owner does not explain why unrecited size or dimension of a “connector” should be a limitation of independent claim 1, under the ordinary and customary meaning of the claim, when dependent claim 9 expressly recites a connector size.

Furthermore, we are not persuaded that the depiction of the connectors in the Figures weighs in favor of limiting the claim term thusly. Although the Figures show a connector square that is smaller than the tile squares (Ex. 1001, Figs. 5–8),

those Figures show embodiments of possible installations. *Id.* at 8:61–9:17. And although the depictions are instructive, we generally do not import into the claims limitations of shown embodiments. Of note is the description of various shapes of the connector: rectangular and triangular shapes. *See id.* at 9:25–28. It would be no more proper to limit the size of the connector, to be smaller than the tile, than it would be to limit the claims to a rectangle or square, simply because that is what appears to be depicted in the patent figures.

Accordingly, we decline to include a size limitation in the plain and ordinary meaning of “connector.”

3. Sequence for Apparatus Claim 14

Patent Owner argues that a person of ordinary skill in the art would construe claim 14 to require that the system identify a specific sequence of steps for installing the system of carpet tile connectors. PO Resp. 17–18. In support of this argument, Patent Owner relies on the Declarations of Messrs. Wood and Endrenyi. *Id.* at 18 (citing Ex. 2014 ¶ 92, Ex. 2017 ¶ 93). The proffered testimony is, however, conclusory. No analysis or factual support is provided for the conclusion that the claim 14 apparatus requires identification of a specific order of steps.

Notwithstanding Patent Owner’s contentions, we do not construe the claim 14 limitation as Patent Owner proposes, in light of our analysis in section II.E.5.c., below.

B. RELEVANT LEGAL PRINCIPLES

To prevail in its challenges to the patentability of claims, the 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). A claim is anticipated, and, thus, unpatentable, if a single prior art reference discloses each and every element of the

claimed invention. *See Schering Corp. v. Geneva Pharms.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003).

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter 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). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and, (4) where in evidence, so-called secondary considerations, including commercial success, long-felt but unsolved needs, failure of others, and unexpected results. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966) (“the *Graham* factors”). The level of ordinary skill in the art usually is evidenced by the references themselves. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

For an obviousness analysis, prior art references must be “considered together with the knowledge of one of ordinary skill in the pertinent art.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (quoting *In re Samour*, 571 F.2d 559, 562 (CCPA 1978)). Moreover, “it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom.” *In re Preda*, 401 F.2d 825, 826 (CCPA 1968). That is because an obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of

ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418; *see also In re Translogic Tech., Inc.*, 504 F.3d at 1259.

Regarding commercial success, this factor “may have relevancy” to the overall obviousness determination (*Graham*, 383 U.S. at 18), but a nexus must exist between the commercial success and the claimed invention. *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311–12 (Fed. Cir. 2006) (“Evidence of commercial success . . . is only significant if there is a nexus between the claimed invention and the commercial success.”). If commercial success is due to an element in the prior art, no nexus exists. *Id.* at 1312; *see also Richdel, Inc. v. Sunspool Corp.*, 714 F.2d 1573, 1580 (Fed. Cir. 1983) (holding claimed invention obvious where patent holder “failed to show that such commercial success . . . was due to anything disclosed in the patent in suit which was not readily available in the prior art”). We analyze the instituted grounds of unpatentability in accordance with the above-stated principles.

C. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner has not stated the level of ordinary skill in the art for this case, and offers the testimony of Dr. Tippett and Dr. Jensen as “evidence of the knowledge that one of ordinary skill in the art would have possessed at the time of the claimed invention because the arts of carpet tile installation systems and adhesive tape are pertinent to the problem to be solved and the claimed solution to the problem.”

Pet. 7. On the other hand, Patent Owner challenges the testimony of Petitioner’s Declarants because Patent Owner contends that a person of ordinary skill in the art is a person having knowledge of carpet tiles and how to install them, not a person who is an expert in adhesive tape. PO Resp. 21.

To determine the level of ordinary skill in the art in this case we consider the type of problems encountered in the art, the prior art solutions to those problems,

the rapidity with which innovations are made, and the sophistication of the technology. *Custom Accessories Inc. v. Jeffrey-Allan Indus. Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986). Also, we are guided by the level of ordinary skill in the art reflected by the prior art of record. *Okajima*, 261 F.3d. at 1355 (the prior art itself can reflect the appropriate level of skill in the art).

We are persuaded that the level of ordinary skill in the art combines the knowledge of carpet tile installation and adhesive tape characteristics. The prior art of record, particularly Kinoshita, describes the solution of laying carpet tiles using adhesive tape pieces to avoid laying adhesive on the floor. Ex. 1007 ¶¶ 1–2, 5. Pacione also describes installation of carpet modules without substantial attachment to the floor. Ex. 1006, Abstract. Therefore, we agree with Patent Owner that the level of ordinary skill in the art includes knowledge of carpet tiles and their installation methods.

We disagree with Patent Owner, however, in that the level of ordinary skill in the art would not include expertise in adhesive tape characteristics. *See* PO Resp. 23 (arguing that Dr. Jensen is not a POSITA because his expertise relates to pressure sensitive adhesive tapes). For instance, Kinoshita discloses the use of removable, single-side or double-sided adhesive tape that is pressed to the rear of the carpet tiles. Ex. 1007 ¶¶ 7–8, 12. Kinoshita recognizes that the adhesive must be of sufficient strength to stick to the rear of the carpet tile, but also allow for repositioning. *Id.* ¶ 12. Details of the backing for pressure sensitive adhesive tape are part of the prior art of record, such as Robinson (Ex. 1014). For example, Robinson describes the properties and characteristics to make the adhesive tape backing suitable for pressure-sensitive adhesive tapes. *Id.* at 1:46–2:44. Therefore, it is appropriate that we consider, as part of the level of

ordinary skill in the art, knowledge of adhesive tape appropriate for carpet tile installations as described in Kinoshita, as well as the knowledge of the properties and characteristics of pressure-sensitive tapes suitable for the use in carpet tile installations.

Patent Owner's arguments that Petitioner's experts are not competent to testify because they are not persons of ordinary skill in the art are unpersuasive. *See* PO Resp. 21–25 (arguing the competency of Dr. Jensen and Dr. Tippett based on the level of ordinary skill in the art). A declarant may be qualified as an expert if the declarant's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue. Fed. R. Evid. 702. Patent Owner has not filed a motion to exclude on the basis of competency of Petitioner's expert witnesses, and, therefore, we do not undertake an analysis of whether the challenged experts are, indeed, qualified under the Federal Rules of Evidence. Nevertheless, arguments that the scientific or technical experience and knowledge of Dr. Jensen and Dr. Tippett do not match the alleged level of ordinary skill in the art are unpersuasive as there is no requirement of a perfect match between the expert's experience and the field of the art in question. *See SEB S.A. v. Montgomery Ward & Co., Inc.*, 594 F.3d 1360, 1373 (Fed. Cir. 2010). Dr. Tippett need not be an adhesive tape engineer to testify regarding glueless carpet tile installations, and Dr. Jensen need not be an expert in carpet tile installations to testify regarding adhesive tape engineering for carpet products. *See* Pet. Reply 3–4 (setting forth that Dr. Jensen has direct experience designing adhesive tapes for installation of carpet products and that Dr. Tippett has experience developing glueless carpet tile installation methods). Furthermore, we are capable of discerning from the testimony, and the evidence presented, whether

the witness's testimony is entitled to any weight, and taking into consideration the areas of expertise of each witness in weighing that testimony accordingly.

With these considerations in mind, we now turn to determining the differences between the prior art and the claims-at-issue.

D. ANTICIPATION BY PACIONE

With respect to the asserted ground of unpatentability based on anticipation by Pacione, we have reviewed the Petition, the Patent Owner Response, and Petitioner's Reply, as well as the relevant evidence discussed in each of those papers. We are persuaded, by a preponderance of the evidence, that claims 1, 2, 5–7, and 9 are anticipated by Pacione.

1. *Overview of Pacione (Ex. 1006)*

Pacione discloses rigid anchor sheets for use under carpets or other decorative coverings. Ex. 1006, 1:11–13. Pacione describes an advantage of allowing the carpet or other decorative covering to be attached to an underlying undersurface at only a few discrete attachments points or, even in some cases, not attached at all, so as to be removable easily. *Id.* at 2:42–46. The Pacione anchor sheet is both flexible and rigid—the rigidity is such that the anchor sheet can support itself without droop, unlike cloth or fabric or tape. *Id.* at 3:56–62. To secure adjoining anchor sheets, Pacione uses “means for detachable attachment” disclosed as a hook and loop attachment or adhesive as an alternative. *Id.* at 4:48–55. In one embodiment, shown in Figure 13, reproduced below, Pacione describes smaller anchor sheets 89 that can be used with carpet tiles 91. *Id.* at 14:24–31.

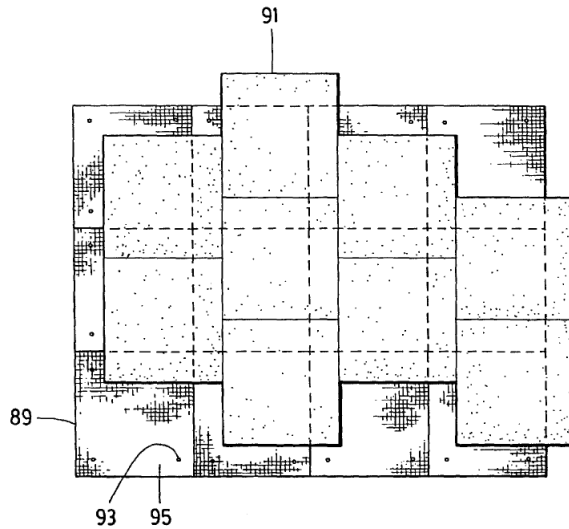


FIG. 13

Figure 13 depicts the overlapping layout of carpet tiles 91 on anchor sheets 89 forming a contiguous mass that is “sufficient to provide for stable installation without attachment to a floor.” *Id.*

2. *Comparison of Pacione and Claims 1, 2, 5–7, and 9*

Independent claim 1 is directed to a system for installing carpet tiles on an underlying surface. Ex. 1001, claim 1. That system comprises a plurality of carpet tiles and a plurality of carpet tile connectors for connecting the plurality of carpet tiles. *Id.* Claim 1 further recites limitations concerning the carpet tile connectors, such as a film with a layer of adhesive comprising sufficient shear strength and the film comprising plastic material sufficiently stiff. *Id.*

The Petition identifies where in Pacione each of the recited limitations is disclosed:

- a) anchor sheets to tie the decorative covering together as a functional unit, where the unit has a flexible decorative covering such as carpet as shown in Figure 13 (the claimed “plurality of carpet tiles” and “a plurality of

- carpet tile connectors for connecting the plurality of carpet tiles”) (Pet. 14);
- b) the anchor sheets preferably made of thin polycarbonate, polyethylene, polypropylene, or polyester and being relatively thin and flexible, but relatively rigid so they do not droop (the claimed “film having two sides” and “the film comprises a plastic material sufficiently stiff”) (*id.* at 14–15);
 - c) anchor sheets with hook and loop attachment system that could also be an adhesive (the claimed “layer of adhesive . . . capable of forming a bond between the film and the undersides of adjacent carpet tiles”) (*id.* at 14);
 - d) installed anchor sheets and coverings form a contiguous floor covering that has sufficient rigidity and horizontal plane stability (the claimed “sufficient shear strength”) (*id.* at 15, 21).

With regard to dependent claims 2, 5–7, and 9, the Petition notes that Pacione discloses: polyester as the material for the anchor sheet of thickness from 0.010 to 0.030 inches (commensurate with claims 2, 5, and 6); hook and loop attachments that could also be an adhesive providing for attachment and reattachment (commensurate with claim 7); and carpet tiles that “free float” on the floor (commensurate with claim 9). Pet. 15–16 (citing Ex. 1006, 4:66–51, 9:49–51, 16:46–50).

Patent Owner challenges the applicability of Pacione to the claims based on three arguments: (1) Pacione does not disclose installation of carpet tiles (PO Resp. 30, 35); (2) Pacione does not disclose a “connector” (*id.* at 31, 35); and (3) Pacione does not disclose the “sufficient shear strength” limitation (*id.* at 32, 35). *See id.* at 30–36. We address each of Patent Owner’s arguments in turn.

a. Carpet Tile Installations

Patent Owner attempts to distinguish the Pacione carpet pieces on the basis that these pieces do not have the structural backing of “carpet tiles.” *Id.* at 30. Accordingly, Patent Owner proffers that a person of ordinary skill in the art would not look to Pacione for guidance or useful information regarding an installation system for carpet tiles. *Id.* We are not persuaded by this argument. The body of claim 1 recites that carpet tiles have an underside, but does not recite any particular characteristic of a carpet tile. Furthermore, consulting the specification, we reach the conclusion that a “carpet tile” is not limited to structurally backed carpet, as Patent Owner argues. The specification describes carpet “tiles” broadly, including that these are “modular floor covering units” and could be made of suitable modular materials. Ex. 1001, 4:44, 51–55. We find no description in the specification limiting the use of the claimed “connectors” with modular floor covering units having a particular structural backing. Moreover, Pacione discloses that the decorative carpet pieces there disclosed may be “carpet tiles.” Ex. 1006, 14:25–31. Pacione further discloses that the pieces may be rigid, such as parquet flooring. *Id.* at 14:31–33. Finally, the testimony Patent Owner proffers for the proposition that the Pacione carpet tiles are not “carpet tiles,” as described in the ’282 patent, is insufficient for us to restrict the claims to an unrecited and unwarranted limitation of structural backing for carpet tiles.

b. Connectors in Pacione

Patent Owner argues that the anchor sheets form a “subfloor” in Pacione and are not “connectors,” as recited in claim 1. PO Resp. 31. The challenge is based on two arguments. First, the anchor sheets do not connect carpet tiles to each other, and, second, they are as large as the carpet pieces. *Id.*

With regard to the first argument, we are not persuaded that the anchor sheets in *Pacione* do not “connect” carpet tiles. As pointed out by Petitioner, *Pacione* discloses that “the anchor sheet acts to *tie* the decorative covering together as a functional unit.” Pet. 14 (citing Ex. 1006, 1:13–17) (emphasis added). To “tie” is to “connect,” and, therefore, arguments to the contrary are not supported by *Pacione*.

We also find unpersuasive the argument that *Pacione*’s anchor sheets are too large to be “connectors.” This argument is based on Patent Owner’s proposed construction of “connector.” As discussed above in the claim construction section, we disagree with Patent Owner that the plain and ordinary meaning of the term includes a size limitation or constraint.

Finally, Patent Owner contends that because an embodiment in *Pacione* discloses pre-attached anchor sheets, those anchor sheets would not be usable at an installation site to link carpet tiles. PO Resp. 31. Patent Owner, however, fails to point out claim language that requires connectors to be usable only at installation sites or connectors that are not pre-attached to a carpet tile. Indeed, we find evidence to the contrary, because the specification of the ’282 patent describes an installation method where the connector is pre-attached. *See, e.g.*, Ex. 1001, 9:29–31 (describing a method of pre-positioning the connectors at desired locations on the tiles during manufacture). Accordingly, we find unpersuasive Patent Owner’s arguments above, that *Pacione* does not disclose the “connector.”

c. Sufficient Shear Strength Limitation

Patent Owner argues that the *Pacione* disclosure of adhesive is insufficient to teach the “sufficient shear strength” limitation. PO Resp. 32–34. According to Patent Owner, the disclosure in *Pacione* is no more than a suggestion to try

adhesive and is not an enabling disclosure. *Id.* We agree with Patent Owner that the “sufficient shear strength” limitation is recited as a property of the layer of adhesive. *See id.* at 33 (Patent Owner arguing that the rigidity and stability are characteristics of Pacione’s anchor sheets, not the adhesive). Nevertheless, the “sufficient shear strength” property results in a connector that prevents adjacent tiles from moving relative to the connector or each other and thereby creating gaps between the adjacent tiles after installation. That is, an adhesive would have the requisite shear strength when the connector accomplishes the prevention of the relative movement that creates gaps.

In Pacione, we find that the anchor sheets, the recited “connector,” are attached with a detachable attachment that could also be an adhesive. *See* Pet. 14 (citing Ex 1006, 4:51–55). With Pacione’s anchor sheets using the disclosed detachable attachment (including the adhesive option) the installed anchor sheets form a contiguous floor covering having sufficient rigidity and horizontal plane stability or shear force stability. *See id.* at 14–15 (citing Ex. 1006, 4:15–20, 5:3–9). We find this disclosure particularly significant because it specifically attributes the shear force stability to the *installed* anchor sheets under the carpet pieces, i.e., the recited “connectors” with the layer of adhesive. It follows from this express disclosure of shear force stability that the *installed* carpet tiles are stable in the horizontal plane, such that their movement with respect to each other, and with respect to the anchor sheets, would be restricted. Despite Patent Owner’s arguments, Petitioner sufficiently establishes by a preponderance of the evidence that Pacione’s anchor sheets, under carpet tiles, exhibiting the disclosed shear force stability, prevent the recited relative movement that creates gaps as recited in the claims.

As for the argument that Pacione is not enabled with regard to the disclosure of using adhesive in place of hook and loop, we are not persuaded that such a disclosure would not inform one of ordinary skill in the art how to make the claimed connector. *See In re Donohue*, 766 F.2d 531, 533 (Fed. Cir. 1985) (“Such possession is effected if one of ordinary skill in the art could have combined the publication’s description of the invention with his [or her] own knowledge to make the claimed invention.”). It is undisputed that Pacione discloses replacement of the hooks with adhesive. Patent Owner makes the point, however, that Pacione does not disclose the characteristics of the adhesive. PO Resp. 33. The question for us to decide is whether Pacione’s disclosure of adhesive is enabled sufficiently to allow a person of ordinary skill in the art to make the claimed connector. The lack of details regarding particular adhesive properties, however, does not negate that Pacione discloses the adhesive application together with anchor sheets that achieve shear force stability when installed. *See, e.g., id.* (citing Ex. 2012, 162:2–163:2, 174:22–175:4, as support for the proposition that Pacione is silent regarding numerical values for the properties of the adhesive).⁹

Furthermore, the testimony of Messrs. Wood and Endrenyi, proffered by Patent Owner to support its contention, does not persuade us that disclosure of adhesive in Pacione is not enabling. *Id.* (citing Exs. 2014 ¶ 132, 2017 ¶¶ 131, 132). That testimony focuses on whether Pacione teaches an adhesive that would prevent lateral movement, a narrow view of the claims that we do not adopt per our claim construction discussion above. *See* Exs. 2014 ¶ 132, 2017 ¶ 132. As already

⁹ We note that Patent Owner’s contention in this regard seems at odds with the disclosure of the ’282 patent, which does not describe any particular numerical values of the property of the adhesive with respect to the shear strength property.

stated, replacing the hook-and-loop mechanism with an adhesive having the properties of hook and loop, such as good horizontal strength, is taught expressly in Pacione. Ex. 1006, col. 16, ll. 46–50 (“A permanent adhesive can be used for a permanent bond between tile 114 and anchor sheet 112 or a temporary adhesive having the properties of hook and loop (i.e. [c]an be attached and reattached and good horizontal strength) can be used.”). We are not persuaded, on the record before us, of Patent Owner’s opposition on the basis that Pacione’s disclosure of using adhesives in place of hook and loop attachment is a mere suggestion and not enabling.

In summary, Patent Owner’s arguments are not persuasive to overcome the evidence presented by Petitioner that claims 1, 2, 5–7, and 9 are anticipated by Pacione. Based on the foregoing, we determine that Petitioner has proven by a preponderance of the evidence that claims 1, 2, 5–7, and 9 are unpatentable as anticipated by Pacione.

E. OBVIOUSNESS BASED ON COMBINATIONS OF REFERENCES

The remaining asserted grounds assert obviousness over various combinations of prior art. We now turn to the analysis of the obviousness grounds primarily based on Kinoshita in combination with Pacione, Robinson, and Matthews. The scope of Kinoshita, Robinson, and Matthews is described below by way of an overview.

1. *Overview of Kinoshita (Ex. 1007)*

Kinoshita is directed to a method for laying carpet tile. Ex. 1007, Abstract. The object of Kinoshita’s method is to lay carpet tiles easily and without the use of floor adhesive. *Id.* The result is laid carpet tiles that do not rise up and peel off when using a vacuum cleaner, even if the carpet tile is lightweight. *Id.* Figure 1 of

of five percent elongation, and economics. *Id.* at 1:45–2:44. Used as a backing for pressure-sensitive tape, the biaxially oriented polypropylene film varies in thickness from 0.5 to 3.0 mils, preferably from about 0.73 to 2.0 mils. *Id.* at 2:45–49.

3. *Overview of Matthews (Ex. 1011)*

Matthews describes seam tape for use in carpet seams. Ex. 1011, 1:10. One embodiment of Matthews describes the dimension of the base sheet of a tape having a width of approximately 2.5 to 7 inches. *Id.* at 7:2–3.

4. *Comparison of Independent Claim 1 With Regard to the Grounds Based on Kinoshita in Combination with Other References*

Petitioner asserts that Kinoshita teaches: (a) adhesive tape pieces 2, unattached to the floor and with the adhesive side facing up for linking carpet unit tiles (the claimed “carpet tiles,” “connectors,” “film,” and “layer of adhesive”) (Pet. 22–23); and (b) adhesive tape pieces 2 that are installed on lightweight-carpet-tile units to prevent the units from rising up and peeling off (the claimed “sufficient shear strength” and “prevents adjacent tiles from moving relative to the connector or each other thereby creating gaps between the adjacent tiles after installation”) (Pet. 23).

Patent Owner challenges Petitioner’s assertion that Kinoshita teaches the claimed “connectors,” because Kinoshita lacks description, explicitly or implicitly, of the adhesive tape properties or performance to prevent lateral movement, and, therefore, the adhesive of the Kinoshita tape cannot be said to have “sufficient shear strength.” PO Resp. 25–29, 36–37. We address Patent Owner’s arguments in turn.

a. Sufficient Shear Strength Limitation

We have construed “sufficient shear strength” to mean having adequate strength to resist shear. The claims attribute this strength to the layer of adhesive with the functional requirement that it prevent movement of the connector, the movement creating gaps. Kinoshita teaches that the adhesive tape links the carpet units together to form an entire carpet that, even if using light weight carpet units, the installed carpet would not rise and peel off. Ex. 1007 ¶ 18. From this teaching we can infer that Kinoshita’s tape is strong enough to perform as described, i.e., to connect the carpet units forming a contiguous mass of carpet flooring that withstands the rigors of regular cleaning. Although Kinoshita does not disclose details of the properties of the tape, such as a range of shear strength or peel strength for the installation disclosed, its lack of detail in this regard is not fatal to the contention that Kinoshita’s adhesive tape renders obvious the use of a layer of adhesive with sufficient shear strength to prevent relative movement—and gaps—in a carpet tile installation.

First, the aspect of Kinoshita’s adhesive tape preventing lifting is applicable to the prevention of relative movement because we have determined that the claims are not limited to only lateral movement—or lateral gaps. That is, we find that Kinoshita’s prevention of rising up “prevents adjacent tiles from moving relative to the connector or each other” as claimed. Furthermore, Petitioner has sufficiently established by a preponderance of the evidence that the adhesive tape of Kinoshita is strong enough to resist movement when vacuuming. Whether Patent Owner characterizes it as vertical movement is of no relevance, because the claims do not exclude the prevention of vertical movement.

Second, we are not persuaded that Kinoshita does not teach any lateral movement or gaps. It is common sense that as the vacuum suction is applied on

the surface of the installed floor, the direction of the suction force has at least two directions: lateral and vertical. Anyone familiar with the act of vacuuming understands that as the vacuum cleaner moves on the surface, the horizontal movement causes at least a force pulling horizontally on the carpet. Because Kinoshita expressly teaches that the installed carpet units resist the pull of the vacuum cleaner, we understand Kinoshita to teach that the linked carpet units resist both the lifting force and the pulling force. It makes sense that if the Kinoshita carpet units do not peel off, there will not be gaps, vertical or otherwise.¹⁰ We do not need expert testimony or an express disclosure in the art to understand the common sense operation and result of vacuuming a carpet tile floor without rising up and peeling off. *See Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1329 (Fed. Cir. 2009) (holding that an analysis of obviousness “may include recourse to logic, judgment, and common sense available to the person of ordinary skill that do not necessarily require explication in any reference or expert opinion”).

Furthermore, we do not agree with Patent Owner’s contention that a person of ordinary skill in the art would not have believed that Kinoshita’s tape would be successful. *See* PO Resp. 26–27 (arguing that Kinoshita’s tape would not prevent lateral tile movement because of the undisputed reputation of adhesive tape failing in carpet tile installations). The testimony of Declarants supporting Patent Owner’s contention focuses, at least in part, on Kinoshita’s silence regarding shear

¹⁰ The Endrenyi and Wood Declarations assert that Kinoshita does not state that the individual tiles will not peel off their respective tape pieces. Ex. 2014 ¶ 106; Ex. 2017 ¶ 108. We find this testimony not credible. Kinoshita’s carpet tiles are adhered only to the tape (not the floor), and, therefore, a teaching of “peeling off” could only refer to the carpet tiles detaching, separating, or otherwise moving from the tape.

strength of the disclosed tape and that Kinoshita is not concerned with preventing lateral movement or lateral gaps. *See id.* (citing Ex. 2014 ¶¶ 108–112; *see* Ex. 2017 ¶¶ 110-114). Again, the claims are not limited to preventing only lateral gaps or lateral movement. Moreover, we are not persuaded that Kinoshita refers only to conventional adhesive tape, and that, therefore, the adhesive tape in Kinoshita would have been known to fail. Kinoshita expressly describes an embodiment in which the backing of the tape and the “adhesive power” is designed for the specific purpose of making installation of carpet tiles easier and linking the underside of the carpet units. *See* Ex. 1006 ¶ 12. This suggests that Kinoshita’s adhesive tape is intended for use in carpet tile installations, and not merely some conventional tape that would be expected to fail at maintaining carpet tiles linked as described.

Lastly, we credit the testimony of Dr. Tippett and Dr. Jensen in that the Kinoshita disclosure confirms the knowledge of a person of ordinary skill in the art regarding the use of adhesive tapes for carpet tile installations. For the reasons that follow, we are not persuaded by Patent Owner’s characterizations of their testimony that engineering adhesive tape for carpet tile installations was vastly complex or would involve extensive trial and error. *See* PO Resp. 27–28. First, we acknowledge that Petitioner does not rely solely on Kinoshita as disclosing all the attributes of the adhesive tape. Indeed, the Dr. Tippett Declaration clarifies that his opinion relies on the disclosures of Kinoshita to the degree it describes the configuration and performance of the installed carpet units, e.g., a “floating” installation, edge-to-edge configuration, unitary installation, etc. Ex. 1015 ¶¶ 14.1–14.2. We credit Dr. Tippett, who has expertise and knowledge of carpet tile installations, when he declares that the installation described in Kinoshita

would have no “gapping” at the seams, and, therefore, the tape, being single-sided, would have to include an adhesive that would resist movement of the tiles. *Id.*

¶¶ 14.4–14.5. It makes sense that a method of carpet tile installation for commercial or household use would aim for carpet tiles that, after installation, remain abutted. *See* Ex. 1007 ¶ 1 (“tile that is used in offices and homes”).

Dr. Tippett’s Declaration further states that Kinoshita supports his conclusions of the basic requirements for the use of adhesive tape in a carpet tile installation.

Ex. 1015 ¶ 14.6. To support his conclusions, Dr. Tippett cites to Kinoshita teaching pre-connected tiles, which are installed as a block of tiles. *Id.* For this installation to be successful, the adhesive tape of Kinoshita, according to Dr. Tippett, “must include an adhesive with sufficient shear strength and sufficient peel strength to prevent movement of the tiles relative to one another and/or the tape pieces.” *Id.*

The Dr. Jensen Declaration also concludes that the teachings in Kinoshita confirm that a person of ordinary skill in the art would select an adhesive tape with the recited shear strength. First, Dr. Jensen opines that suitability for the intended purpose is a core consideration when selecting or designing tape for a given application. Ex. 1016 ¶ 18.2. His Declaration then lists the criteria to consider when selecting a tape that would maintain the Kinoshita carpet units connected and abutting (in an edge-to-edge configuration). *Id.* ¶¶ 18.3–18.5 (listing adhesive compatibility with the tile backing, greater cohesive strength than adhesive strength, appropriate elastic modulus, and thickness of the backing). Once Dr. Jensen arrives at the basic requirements of an adhesive tape selection, he looks to Kinoshita once more to confirm that Kinoshita recognizes these requirements. *Id.* ¶¶ 18.6–18.11 (establishing, among other tape requirements, that, because

Kinoshita discloses multiple pre-connected tiles being handled as a block, the adhesive tape would need to have sufficient shear adhesion and peel adhesion to prevent the carpet tiles from pulling or twisting apart from each other while the tiles are moved).

Based on the cited testimony, we are not persuaded that Petitioner is relying on a theory of inherency with regard to whether Kinoshita discloses the “sufficient shear strength” limitation. Therefore, the arguments by Patent Owner rebutting the alleged “inherency” are unpersuasive. *See* PO Resp. 28–29. Petitioner relies on what Kinoshita teaches to a person of ordinary skill in the art. That person is a person of ordinary creativity, not an “automaton.” *KSR*, 550 U.S. at 421. We “can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.* at 418. Therefore, based on the evidence presented, we are persuaded that Petitioner sufficiently establishes by a preponderance of the evidence that Kinoshita teaches, to a person of ordinary skill in the art, the use of adhesive tape for carpet tile installations where the adhesive has “sufficient shear strength,” per our construction of this phrase.

b. Material Sufficiently Stiff Recited in Independent Claim 1

Claim 1 recites that the film comprises “plastic material sufficiently stiff for a connector positioned partly in contact with an underside of a carpet tile to project beyond the edge of the carpet tile in roughly the same plane as the underside of the carpet tile.” Ex. 1001, claim 1 (hereinafter “stiffness limitation”). Petitioner relies on Pacione’s disclosure of a flexible, but relatively rigid anchor sheet as disclosing this limitation. Pet. 27–28 (citing Ex. 1006, 1:11–12, 3:60–62).

Patent Owner challenges the asserted combination of Kinoshita and Pacione because nothing in Kinoshita teaches or suggests that the adhesive tape pieces

should be stiff, no one in the industry has “ever made that alleged ‘obvious’ design choice,” and a person of ordinary skill in the art would not look to Pacione to make the alleged combination. *See* PO Resp. 37. We are not persuaded by these arguments.

First, Kinoshita does not need to teach or suggest a stiff adhesive tape for the modification to be obvious. *See* KSR, 550 U.S. at 418 (“[T]he [obviousness] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.”). Second, Patent Owner does not cite any authority requiring that for a modification to be obvious, someone must have made the alleged combination. Further, as to challenge of the rationale for the combination of Kinoshita and Pacione, we note that if the proposed modification is a predictable variation, it is likely barred by § 103. *Id.* at 417. In the instant case, the Petition states that it would have been obvious to one of ordinary skill in the art to use a sheet having some degree of rigidity as described in Pacione to maintain the tiles in a flat contiguous state and for ease of handling during installation. *See* Pet. 27; Ex. 1015 ¶ 14.2; Ex. 1016 ¶ 18.8 (“tape pieces may need to be stiff enough to install them with a single hand, as is commonly desired for many tape applications”). No unpredictability has been alleged regarding Kinoshita’s adhesive tape pieces modified to include the rigidity taught in Pacione. Furthermore, Patent Owner has not alleged that such a modification would be beyond the level of an ordinarily skilled artisan. *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007). Regarding the level of ordinary skill, Patent Owner’s attack of Dr. Jensen’s opinions on the basis that he is not an expert on carpet tile installations has been addressed above and need not be repeated here.

Patent Owner also argues that a person of ordinary skill in the art would not incorporate the rigidity of Pacione's anchor sheets to the adhesive tape pieces of Kinoshita. PO Resp. 38–39 (arguing, for example, that Pacione's anchor sheet would be detectable underfoot and make the floor seem uneven if installed as disclosed in Kinoshita). The arguments are unpersuasive because the obviousness inquiry focuses on what the combined teachings would have suggested to those of ordinary skill in the art, not whether the feature of the rigidity of Pacione could be bodily incorporated in the Kinoshita adhesive tape. *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981); *see also In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. United States*, 702 F.2d 1005, 1013 (Fed. Cir. 1983) (“[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review.”)). It is also unpersuasive that Pacione's anchor sheets have additional functions of providing stable backing for carpet pieces. *See* PO Resp. 38. Pacione need not solve the same problems addressed in Kinoshita and vice versa. *See Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1323 (Fed. Cir. 2005) (“One of ordinary skill in the art need not see the identical problem addressed in a prior art reference to be motivated to apply its teachings.”). The rigidity of anchor sheets has been alleged to assist in maintaining a flat tile installation and ease of handling of during installation. *See* Ex. 1016 ¶ 18.8. That rigidity, however, is tempered with flexibility. For example, Pacione teaches that the anchor sheets are “a relatively thin flexible but relatively rigid anchor sheet for use under carpets.” Ex. 1006, 1:11–12, 3:56–62 (flexible in the sense that it can bend and be rolled). We are persuaded that Petitioner has sufficiently established by a preponderance of the evidence that Pacione teaches the stiffness limitation. And we are persuaded

that the flexible, but rigid, thin plastic film of the anchor sheet provides benefits of ease of handling that would motivate a person of ordinary skill in the art to consider selecting, for Kinoshita's adhesive tape, a thickness that offers rigidity and flexibility as taught in Pacione.

5. Dependent Claims 2–14

Concerning the dependent claims, Petitioner's claim charts allege that—in combination with Kinoshita—Pacione, Robinson, and Matthews disclose the various recited limitations. Pet. 26–30.

Patent Owner disputes the evidence presented with respect to dependent claims 3, 4, 8, and 14. PO Resp. 39–49. We analyze each of these dependent claims.

a. Dependent Claims 3 and 8

The Petition alleges that additional recited limitations of dependent claims 3 and 8 are taught by Robinson, as disclosed in the proffered claim charts. Pet. 29–30. More particularly, Petitioner asserts that the installation of carpet units shown in Figure 1 of Kinoshita, combined with teachings of the tensile strength and elongation of Robinson's film backing, renders obvious dependent claims 3 and 8. *Id.* (referring to Kinoshita as applied to claim 1). Patent Owner challenges this assertion by arguing that the Petition does not explain the reasons a person of ordinary skill in the art would either select Robinson or use it with Kinoshita, and that such a person would not have a reasonable expectation of success. PO Resp. 41–42. Patent Owner further proffers that Robinson has no applicability to either floorcoverings or carpet installations. *Id.* at 41. Furthermore, Patent Owner argues that the combination of Kinoshita, Pacione, and Robinson is rooted in hindsight. *Id.* at 43. We are not persuaded by Patent Owner's arguments.

As to the argument that the Petition does not provide a reasonable rationale, we note that the Petition states that the use of film as a backing for adhesive was known and that one of ordinary skill in the art would find it obvious to select the properties of the film suitable for the intended use of Kinoshita, i.e., connecting carpet tiles to one another. Pet. 20. To support this rationale, Petitioner proffers the Declaration of Dr. Tippett, who attests that “one who is even reasonably familiar with carpet tile installation systems could easily have identified an adhesive tape that would be suitable, or could have worked with an adhesive tape company to do so.” Ex. 1015 ¶¶ 14.10–14.11. According to Dr. Tippett, it is routine for adhesive tape companies to provide guidance regarding tape selection, such that an adhesive tape engineer or scientist would assist in making a suitable selection for the intended purpose of joining carpet tiles to one another.

Id. ¶ 14.10. More particularly to the tensile strength teachings of Robinson, Dr. Tippett states that one of ordinary skill in the art would select film-backed adhesive tapes over paper-backed tapes, because the latter lack the strength needed.

Id. ¶ 14.9. He further states that a standard choice of film or tape backing is biaxially oriented polypropylene, to which Robinson is directed. *See id.*

The selection of biaxially oriented polypropylene film is further confirmed by Dr. Jensen, who has been shown to have particular knowledge of tape engineering. *See* Ex. 1016 ¶ 18.10. Dr. Jensen attests that the number of choices for film backing is a reasonable number, such as polypropylene, polyester, paper, polyethylene, cellophane, and laminates. *Id.* And one of ordinary skill in the art would have selected a biaxially-oriented (either polyethylene or polypropylene) film backing for the Kinoshita installation, according to Dr. Jensen. *Id.* A proffered reason for this selection being obvious to a person of ordinary skill in the art is that such a film is readily available and of low cost. *Id.* Another proffered

reason for selecting this film is that it does not stretch or deform as readily. *Id.* Therefore, according to Dr. Jensen, an elongation break or ultimate elongation of 100–200% is expected. *Id.*

Accordingly, we find that Petitioner has shown sufficiently a rationale for selecting Robinson’s teaching of a biaxially-oriented propylene tape backing, notwithstanding that the teachings are not directed, specifically, to carpet tile installation tape. The rationale is reasonable, particularly in light of the teachings in Robinson regarding the specific film characteristics to consider, a few of which are elongation, tensile strength, and flexibility. *See* Pet. 57–58 (citing Ex. 1014, 1:57–2:31). We do not agree that the teachings in Robinson are being considered in hindsight, because Robinson itself teaches reasons for a person of ordinary skill in the art to select biaxially-oriented propylene tape backing with the elongation and tensile strengths disclosed. *See id.* We do not agree that the motivation to apply Robinson’s teachings is, solely, the claims of the ’282 patent.

We now address the argument that Robinson exhibits an easy tear characteristic that Patent Owner argues is unsuitable for carpet tile installations. PO Resp. 41. Mr. Endrenyi states that Robinson teaches a backing that has a relatively low cross tear to permit easy tearing when desired for dispensing. Ex. 2014 ¶ 147; *see also* Ex. 2017 ¶ 148 (Mr. Wood stating the same). He opines that easy tearing would not be a desirable characteristic of a carpet tile connector because the carpet tile connector would need to resist tearing in all directions. Ex. 2014 ¶ 148.¹¹ Patent Owner’s argument and supporting evidence, however, is

¹¹ We note that during cross-examination, Mr. Endrenyi testified regarding Robinson’s disclosure of high edge tear and low cross-tear by comparing these to the product called Tactiles, not the claim. Ex. 1039, 206:3–12. Therefore, the distinction is unpersuasive.

not commensurate with the scope of claims 3 and 8. For example, claim 3 recites a specific tensile strength, not tear strength, and “in at least one direction.” There is no recitation in claim 3 of a tear strength, or a specific tensile strength in all directions. Review of claim 8 yields the same conclusion, because the claim recites stretching at least 120% of “the dimension.” Patent Owner does not challenge that the recited tensile strength and elongation parameters are disclosed by Robinson. Accordingly, arguments that Robinson would be inapplicable or inoperable because of a low cross tear disclosure are not persuasive.

b. Claim 4

Claim 4 recites connectors with a surface area of approximately 9 square inches. Ex. 1001, 10:46–48. The Petition alleges obviousness of these claims by relying on the combination of Kinoshita, Pacione or Robinson, and Matthews. Pet. 40–41. Patent Owner challenges the combination arguing that the “more-glue” belief would teach against selecting a size for the Kinoshita adhesive tape to encompass a surface area of approximately 9 square inches. PO Resp. 44–45. We are not persuaded by Patent Owner’s argument. The argument that those of ordinary skill in the art would believe that “more-glued-surface-area is better,” even if true, does not negate the fact that Kinoshita teaches a glueless installation of carpet tiles. Kinoshita is a clear and express departure from the “more-glue” belief. With that knowledge and the express disclosure in Kinoshita of adhesive tape pieces that are indisputably smaller in surface area than the carpet tiles, we find unpersuasive the argument that a “more-glue” belief would turn a person of ordinary skill in the art away from teachings of glueless attachments, such as those in Kinoshita.

Furthermore, we are not persuaded by Patent Owner's arguments challenging the proffered rationale for the alleged combination. *See* PO Resp. 45–47 (arguing that the Petition provides no credible rationale, no rationale for cutting the Matthews tape, and that Petitioner's analysis is impermissible hindsight). Kinoshita teaches that an adhesive tape piece has a surface area smaller than the carpet unit surface area. *See* Ex. 1007, Fig. 1. Nevertheless, there is no evidence that Kinoshita is drawn to scale. *See* Pet. Reply 8 (arguing that Kinoshita's drawings cannot be used to determine the precise dimensions of the tape pieces). Therefore, other than the disclosure of the adhesive tape pieces being smaller than the carpet tiles, it is not possible from a study of Kinoshita to understand the precise dimensions and relative surface areas of the carpet pieces and the adhesive tape pieces.

Furthermore, we find that Matthews discloses a carpet tape with a base sheet that is 2 ½ to 7 inches wide. Ex. 1011, 5:6–8, 7:2–3. As for a rationale to combine Kinoshita with Matthews, Petitioner offers evidence that it would have been obvious to one of ordinary skill in the art to consider tape widths of Matthews in designing tape pieces for use in Kinoshita to provide stability along the seams of carpet pieces. Pet. 40 (citing Ex. 1015 ¶ 17.2; Ex. 1016 ¶ 20.2). Cutting the tape disclosed in Matthews into a square shape, which is the shape disclosed in Kinoshita, would result in a range of squares from 6.25 to 49 square inches, which includes the range of 9 square inches as disclosed in the claim. *See id.* at 41.

Therefore, Kinoshita expressly teaches an adhesive tape piece smaller than the carpet tile and a square shape (Ex. 1007 ¶ 17, Fig. 1), and, thus, cutting the Matthews tape to achieve that square shape is nothing more than using Kinoshita itself as the teaching that motivates a person of ordinary skill in the art to cut the

Matthews tape. Patent Owner's arguments that no rationale is proffered in the Petition are unpersuasive. Similarly unpersuasive is the argument that the only modification of the Kinoshita tape pieces would be to apply Matthews to extend the tape along the entire seam. *See* PO Resp. 47. This argument obfuscates the obviousness analysis presented in the Petition. The issue we decide is not whether the teaching in Matthews of applying tape to carpet is applicable to Kinoshita. As already stated, we determine whether in light of Kinoshita's teaching of square adhesive tape pieces, cutting the tape disclosed in Matthews to a square shape renders obvious the claimed invention. And we determine that it does.

Furthermore, we are not persuaded that Matthews has no applicability to the claims at issue merely because the Matthews tape is incompatible with or unsuitable for carpet tiles. *See id.* at 45; *see also* Pet. Reply 10–11 (argument and evidence by Petitioner that Matthews is applicable to carpet tiles despite being directed to lighter materials).

c. Claim 14

Patent Owner argues that claim 14 identifies a sequence of installation steps in a tile-connector-tile placement order. PO Resp. 47. According to this argument, Kinoshita does not teach the limitations recited in claim 14 because the Kinoshita installations are not in the recited order. *Id.* at 48–49. For example, Patent Owner contends that Kinoshita teaches laying all of the tiles first, and then connecting them, or laying all of the tape pieces, and then installing the tiles. *Id.* at 49. What Kinoshita fails to disclose, according to Patent Owner, is positioning the adjacent tile *after* part of the connector is adhered to the first tile. *Id.* We find Patent Owner's arguments unpersuasive for two reasons.

First, Kinoshita teaches or suggests the limitations recited in claim 14. As Petitioner points out, Kinoshita teaches laying out all the carpet units, curling up the corner, and placing the adhesive tape afterwards to link the corners. Pet. 25–26 (citing Ex. 1007 ¶ 16). Kinoshita also teaches that, when re-laying the existing carpet tiles, “tile carpet units are removed one by one,” and then new tile carpet tile units are laid “in order using the same procedure.” See Pet. Reply 9 (citing Ex. 1007 ¶ 8). From these teachings advanced by Petitioner, we infer two different methods of installation. For the first method, Kinoshita suggests that two carpet tiles are placed on the floor, side-by-side, and that one of the tile’s corners can be curled up to position the adhesive tape at the corner. We understand that this positioning leaves some exposed portion of the adhesive tape such that, when curling the adjacent tile’s corner, the exposed portion of the adhesive tape adheres to the underside of the adjacent tile’s corner. We are persuaded that this first method in Kinoshita teaches that “a first carpet tile is placed on the underlying surface; a connector is then positioned so that only a first portion of the connector adheres to the underside of the first carpet tile,” as recited by claim 14. We are also persuaded that, under this first method, Kinoshita suggests positioning the adjacent carpet tile adjacent to the first carpet tile such that “a second portion of the connector extend[s] from the underside of the first carpet tile,” which is part of positioning the connector, as recited in claim 14. We find that the action of curling up a corner of the adjacent carpet tile moves or arranges at least part of the carpet tile (the recited “positioning”) to complete the installation required by claim 14: “so that the second portion of the connector adheres to the adjacent tile.”

Patent Owner argues that “curling up” of the tile corners, however, only occurs after the tiles are “positioned” on the underlying floor. PO Resp. 49. This

argument implies that the recited “position[ing]” cannot encompass the movement of the tile’s corner to adhere that corner to the connector. The claim is silent, however, regarding the degree or direction of movement of the adjacent tile to accomplish positioning.

Notwithstanding our determination that Kinoshita’s first method, described above, teaches or suggests the installation recited in claim 14, we also determine that the further limitations recited in claim 14 are entitled to no patentable weight. Claim 14, as discussed below, recites non-functional-descriptive material.

First, we have already determined that the combination of Kinoshita and Pacione teach or suggest all the claim limitations recited in claim 1, which is an apparatus claim. All the structural limitations regarding the carpet tiles and the recited connectors have been shown to be taught by Kinoshita, with the recited stiffness property taught or suggested by Pacione. Claim 14 adds a further limitation to the system for installing carpet tiles, i.e. “the system further *identifies* that to install the carpet tiles using the connectors,” steps are followed. Ex. 1001, 11:6–8 (emphasis added). The system, therefore, conveys information regarding the steps to follow when installing the recited carpet tiles and the connectors. We find no disclosure in the specification regarding how the “system further identifies” the recited steps. We do find that, in the specification, the steps are part of a disclosed installation method (*id.* at 8:33–44), but, in claim 14, the steps are identified by a system, not actually performed. In short, the system identifies the installation steps by providing tangible instructions—a printed sheet of instructions, for example, or instructions, description, or pictures. *See* Tr. 32:4–18.

When reviewing a claim that contains descriptive material, we focus on the claim as a whole. *In re Gulack*, 703 F.2d 1381, 1385 (Fed. Cir. 1983). Printed

matter is non-statutory subject matter if it does not have a functional relationship to a substrate. *See In re Miller*, 418 F.2d 1392, 1396 (CCPA 1969) (observing that “printed matter by itself is not patentable subject matter, because [it is] non-statutory,” but finding that because the printed matter at issue—volumetric indicia and a legend—had a “new and unobvious functional relationship” to the claimed measuring receptacle, the printed matter had patentable weight). “Where . . . printed matter is not functionally related to the substrate, the printed matter will not distinguish the invention from the prior art in terms of patentability.” *In re Ngai*, 367 F.3d 1336, 1339 (Fed. Cir. 2004) (quoting *In re Gulack*, 703 F.2d 1381, 1385 (Fed. Cir. 1983)). “Although the printed matter must be considered, in that situation it may not be entitled to patentable weight.” *Gulack*, 703 F.2d at 1385. The rationale in the printed-matter doctrine is to prevent “the indefinite patenting of known products by the simple inclusion of novel, yet functionally unrelated limitations.” *King Pharms., Inc. v. Eon Labs, Inc.*, 616 F.3d 1267, 1279 (Fed. Cir. 2010).

Patent Owner asserts that claim 14 recites a further identification and that is “widely the practice and has long been the practice to include instructions provided by the tile makers to installers.” Tr. 29:3–16. According to Patent Owner “[t]hose [instructions] are often provided in print form and accompanying tiles,” “[a]nd they are also on websites as well as probably other places.” *Id.* Patent Owner distinguished Kinoshita, not on the basis that Kinoshita did not provide any instructions, but that it did not provide the recited instructions. *See id.* at 29:20–25; 31:1–9; *see also id.* at 30:13–24 (“we are simply asking the court to recognize the difference between the instructions of Claim 14 and the instructions or descriptions of installation methods in Kinoshita”). The inescapable conclusion

is that claim 14 is directed to printed matter in the form of instructions for installing carpet tiles. Such printed matter has no functional relationship to the carpet tiles, connectors, or the features of the film recited in claim 1. For example, the instructions are not provided anywhere in particular, for example, they could be on a website, wholly unrelated to the functions of the recited carpet tiles and the connectors. The system performs in the same manner, whether the instructions are on the carpet tile box, printed on the connector, or provided as diagrams or words. In short, the structure or configuration of the instructions makes no difference to the carpet installation system. The only argument presented by Patent Owner is that the instructions themselves are novel. Nevertheless, even if the instructions, with the recited sequence, were to have a functional relationship to the system, the recited instructions differ from Kinoshita only in the content of those instructions, which is not a patentable distinction.

A claim may not be argued as patentably distinct simply because it is alleged to be a new product by virtue of including printed matter, even if that printed matter itself is new. *See In re Ngai*, 367 F.3d at 1339. Thus, adding instructions to a kit that describe a method of using the kit does not make the kit patentable over the same kit with a different set of instructions. Although there are cases where the descriptive material can form a functional relationship with the underlying substrate, the addition of printed matter to the outside of a measuring cup, for example, the fact that, in this case, there are instructions indicating a specific sequence of installing carpet tiles does not change any of the components of the system, namely the carpet tiles or the connectors and their features. That is, the carpet tiles and the connectors are taught by the prior art, and the added instructions for installing those carpet tiles with the recited connectors, i.e., the printed matter, has no function of its own.

We are further persuaded that allowing claim 14 to maintain patentable weight would allow for repeated patenting of a known product merely by changing the installation instructions. *In re Ngai*, 367 F.3d at 1339 (“If we were to adopt Ngai’s position, anyone could continue patenting a product indefinitely provided that they add a new instruction sheet to the product.”). We, therefore, conclude that the combination of Kinoshita and Pacione teach or suggest all the limitations of claim 1, as described above, and that any argued difference between Kinoshita and claim 14 is simply a difference in the content of the instructions. Such a distinction does not change the functioning of the carpet tiles and connectors, because any set of instructions does not change the operation of the carpet tiles and connectors, and yields the same result, e.g., installation of a contiguous carpet tile flooring with connectors placed at the corners of carpet tiles.

d. Remaining Dependent Claims

We have reviewed the briefs and the supporting evidence concerning the additional limitations recited in dependent claims 2, 5–7, and 9–13 as being obvious over combinations of Kinoshita and Pacione. *See* Pet. 24–25, 26–28. Patent Owner does not challenge Petitioner’s evidence or arguments regarding the additional limitations recited in these dependent claims. We are persuaded that Petitioner has shown that the proffered prior art teaches those limitations.

6. Evidence of Secondary Indicia of Non-Obviousness

Notwithstanding what the teachings of the prior art would have suggested to one with ordinary skill in the art at the time of the ’282 patent’s invention, the totality of the evidence submitted, including objective evidence of nonobviousness, may lead to a conclusion that the claimed invention would not have been obvious to one with ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–1472

(Fed. Cir. 1984). Secondary considerations may include any of the following: long-felt but unsolved needs, failure of others, unexpected results, commercial success, copying, licensing, and praise. *Graham*, 383 U.S. at 17. Patent Owner argues that numerous objective indicia demonstrate the non-obviousness of its claimed invention. PO Resp. 50–56.

Before delving into the specific arguments and evidence of secondary considerations, we note that it is not sufficient that a product or its use merely be within the scope of a claim in order for objective evidence of nonobviousness tied to that product to be given substantial weight. There must also be a causal relationship, termed a “nexus,” between the evidence and the claimed invention. *Merck & Co., Inc. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1376 (Fed. Cir. 2005). A nexus is required in order to establish that the evidence relied upon traces its basis to a novel element in the claim, not to something in the prior art. *Institut Pasteur & Universite Pierre et Marie Curie v. Focarino*, 738 F.3d 1337, 1347 (Fed. Cir. 2013). Objective evidence that results from something that is not “both claimed and novel in the claim,” lacks a nexus to the merits of the invention. *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011).

All types of objective evidence of nonobviousness must be shown to have nexus. *In re GPAC Inc.*, 57 F.3d at 1580 (nexus generally); *see also Rambus Inc. v. Rea*, 731 F.3d 1248, 1256 (Fed. Cir. 2013) (long-felt need); *Wm. Wrigley Jr. Co. v. Cadbury Adams USA LLC*, 683 F.3d 1356, 1364 (Fed. Cir. 2012) (copying); *In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996) (commercial success).

The stronger the showing of nexus, the greater the weight accorded the objective evidence of nonobviousness. *See Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 306 (Fed. Cir. 1985).

a. Long-Felt Need

Patent Owner argues that the application of glue for carpet tile installations dominated the market and there was a need for viable glueless options and for carpet installations with no lateral tile movement. PO Resp. 51. To establish evidence of a long-felt but unresolved need, a patent owner must show that there was a persistent problem that was recognized by those of ordinary skill in the art. *See In re Gershon*, 372 F.2d 535, 539 (CCPA 1967). The problem must not have been solved previously by another, and the claimed invention must, in fact, satisfy the long-felt need. *See Newell Cos., Inc. v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988).

Here, although there is some evidence that a prevailing installation for carpet tiles involved applying glue to the floor, Patent Owner's Response fails to show when the problem first arose and how long this need was felt. *See Tex. Instruments, Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1178 (Fed. Cir. 1993) (“[L]ong-felt need is analyzed as of the date of an articulated identified problem and evidence of efforts to solve that problem.”); *see also* Ex. 1041, 141:12–22 (Mr. Benny Wood, Declarant offered by Patent Owner, testifying that he did not think that there was a long-felt need to eliminate glue from carpet tile installations because there are situations when glue is better).

Further, Patent Owner fails to show that the alleged need for a glueless installation was not solved by another. The record includes two references, Kinoshita and Pacione, in the prior art that disclose installations of carpet tiles without glue. The evidence presented shows that Pacione's system, at a minimum, satisfied the alleged need for no lateral tile movement. Petitioner also has introduced evidence that at the time of the invention other flooring companies

already had developed and sold glueless installation methods. Pet. Reply 12. Furthermore, although two of Patent Owner's Declarants state that the TacTile product, alleged to have solved the need, included an adhesive layer that prevents lateral tile movement, that testimony is conclusory and unsupported by any facts, and, thus, is given little weight. *See* Ex. 2017 ¶ 73; Ex. 2030 ¶¶ 115–116. The cited portions of the Declarations of Mr. Thomas Anderson (Ex. 2022 ¶¶ 15–33) and Mr. Frank Endrenyi (Ex. 2014 ¶¶ 68–73), also fail to reveal any evidence that the TacTiles included the adhesive layer with sufficient shear strength that prevents relative movement or the film with a plastic material sufficiently stiff.

For the foregoing reasons, the objective evidence proffered by Patent Owner is insufficient to establish a long-felt, but unmet, need.

b. Unexpected Results and Skepticism

Patent Owner provides testimony of its Chief Innovations Officer and named inventor, Mr. John Bradford, to show that there was skepticism. PO Resp. 52 (citing Ex. 2030 ¶¶ 29–30). This testimony fails to show that those who are alleged to express skepticism were experts in the field of the invention claimed in the '282 patent. Next, Patent Owner proffers Declarations from Messrs. Endrenyi and Anderson as expressing skepticism when first exposed to TacTiles. *Id.* The cited testimony, however, seems directed to aspects that are not claimed, such as stabilizing the tiles. *Id.*

Finally, we are persuaded by Petitioner's argument that Patent Owner failed to show unexpected results. Pet. Reply 12. Patent Owner needed to show that the claimed invention exhibits some superior property or advantage that one of ordinary skill in the art would have found surprising or unexpected. *See In re Soni*, 54 F.3d 746, 750 (Fed. Cir. 1995). That carpet dealers and installers attempted to

pull apart the connectors does not show either an advantage or superior property that was unexpected by persons of ordinary skill in the art. Further, there is no evidence that the carpet installers or dealers were persons of ordinary skill in the art, e.g., there is no evidence of their knowledge of adhesive tape properties suitable for carpet tiles.

c. Commercial Success

Patent Owner asserts that 158 million TacTiles connectors have been sold since introduction of the product in 2006. PO Resp. 53. Various features are alleged to contribute to this success, including the stiffness, small size, that they engage the tiles at discrete locations within the installation, and that they avoid the need for adhering the tiles to the floor. *Id.*

Even assuming that the TacTiles connectors include all the recited limitations of the claims-at-issue, there is insufficient evidence in the record to warrant a finding of commercial success that supports a conclusion of non-obviousness. As we indicated before, glueless installations were known in the art at the time of the invention of the '282 patent. To the extent the alleged success is based at least partly on this feature, Patent Owner has not shown that such success is due to the merits of the claimed invention beyond what was readily available in the art. *See In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991) (finding the prior art possessed the function relied upon by the patent applicant to establish unexpected results and, therefore, was not a basis for rebutting a prima facie finding of obviousness); *J.T. Eaton & Co., Inc. v. Atlantic Paste & Glue Co.*, 106 F.3d 1563, 1571 (Fed. Cir. 1997) (“[T]he asserted commercial success of the product must be due to the merits of the claimed invention beyond what was readily available in the prior art.”). Indeed, Petitioner points us to testimony of Mr. Bradford stating that the reasons for selling the product to carpet tile customers

varied, and that sales of carpet tiles were driven by many factors, including price. *See* Pet. Reply 14.

Furthermore, Patent Owner's Response neither argues nor points to evidence of market share. *See In re Baxter Travenol*, 952 F.2d at 392 (“[I]nformation solely on numbers of units sold is insufficient to establish commercial success.”); *see also In re Huang*, 100 F.3d at 140 (declining to find evidence of commercial success because “[a]though [the inventor's] affidavit certainly indicates that many units have been sold, it provides no indication of whether this represents a substantial quantity in this market”). The testimony of the sales of TacTiles must be correlated with evidence of market share, of which there is very little. The Declaration of Mr. Bradford attests to there being an estimated increase of at least 13.4% of all commercial carpet tile sold annually in the United States. Ex. 2030 ¶ 114. This evidence is insufficient. There is no indication that the increase is a substantial quantity in the overall market. Further, there is no evidence of the market share before the TacTiles connectors were introduced in the market. The testimony regarding the purported 13.4% increase in sales also includes sales of FLORDots connectors, which Patent Owner has not argued embody the claims-at-issue. In short, Patent Owner provides no evidence that the 158 million of TacTiles connectors sold represent a substantial quantity in the overall market.

d. Copying

Lastly, Patent Owner alleges that multiple copycat products have emerged since the introduction of the TacTiles connectors. PO Resp. 55–56. Copying, as objective evidence of nonobviousness, requires evidence of effort to replicate a specific product. *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010); *Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir.

2004). In the instant proceeding, the testimony proffered by Patent Owner in support of this copying contention is devoid of any evidence from which we could infer that the alleged copies resulted from an effort to replicate the product. *See, e.g.*, Ex. 2030 ¶¶ 117–120 (asserting, without factual support, that introduction of copies was due, in part, to Patent Owner’s success, and that all products are sold to prevent gapping or undesired moving); *see also, e.g.*, Ex. 2023 ¶ 9 (stating that an Eco-sticker product “appeared” to copy Patent Owner’s product). The allegations that the products look similar and are used to install carpet tiles without glue in no way show that any of the entities producing those products actually copied Patent Owner’s TacTiles connectors. Furthermore, arguments that the alleged copies infringe foreign counterparts, not at issue in this proceeding, are wholly inapplicable and unpersuasive. *See, e.g.*, Ex. 2023 ¶ 16.

7. *Conclusion of Obviousness*

After weighing the evidence of obviousness and nonobviousness of record, on balance, we conclude that the strong evidence of obviousness outweighs the insufficient evidence of nonobviousness. For the foregoing reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1–14 would have been obvious as follows:

- a) claims 1, 2, 5–7, and 9–14 over Kinoshita and Pacione;
- b) claims 3 and 8 over Kinoshita, Pacione, and Robinson;¹² and
- c) claim 4 over Kinoshita, Pacione, and Matthews.

¹² We do not reach a determination of whether claims 3 and 8 also are obvious over the combination of Pacione and Robinson.

F. MOTION TO AMEND

Patent Owner moves to substitute challenged claim 1 with proposed substitute claim 15, if we determine that claim 1 is unpatentable. Mot. to Amend 1. Because we determine that claim 1 is unpatentable, we now consider Patent Owner's Motion to Amend. For the reasons set forth below, the Motion is denied.

Proposed substitute claim 15 is reproduced below.

15. A system for installing carpet tiles on an underlying surface, the system comprising:

a plurality of carpet tiles, wherein each carpet tile comprises an underside having a surface area; and

a plurality of carpet tile connectors for connecting the plurality of carpet tiles, each carpet tile connector comprising:

a film having two sides; and

a layer of adhesive a layer of adhesive located on a side of the film, wherein the layer of adhesive is capable of forming a bond between the film and the undersides of adjacent carpet tiles and comprises a sufficient shear strength so that, when a connector spans adjacent edges of the adjacent carpet tiles, so that the layer of adhesive contacts the undersides of the adjacent carpet tiles, the connector prevents adjacent tiles from moving relative to the connector or each other thereby creating gaps between the adjacent tiles after installation,

wherein the film comprises a plastic material sufficiently stiff for a connector positioned partly in contact with an underside of a carpet tile to project beyond the edge of the carpet tile in roughly the same plane as the underside of the carpet tile, and

wherein the connectors have sufficient adhesive shear strength and resist stretching sufficiently so that, in an installation of the carpet tiles connected with the connectors, the connectors stabilize the carpet tiles to retain their relative positions in the installation when subjected to foot traffic, rolling traffic, and stresses applied during cleaning and maintenance (1) without adhering the carpet tiles to the underlying surface and (2) while adhering to less than 5% of the surface area of the undersides of the tiles in the installation.

1. Analysis of Proposed Claim 15

According to Patent Owner, proposed claim 15 adds to challenged claim 1 four features: (1) connectors with adhesive shear strength to stabilize the carpet tiles to retain relative positions in an installation; (2) connectors resisting stretching sufficiently to stabilize carpet tiles to retain their relative positions in an installation; (3) connector stabilizing the carpet tiles to retain their relative positions without adhering to the underlying surface; and (4) connectors stabilizing carpet tiles to retain their relative positions in an installation while adhering to less than 5% of the surface area of a tile. *See* Mot. to Amend 5–6. Patent Owner contends that these limitations are fully disclosed in the specification and that the prior art of record, alleged to be the closest prior art, does not render obvious the proposed claim. *Id.* at 5–8. We analyze each of these limitations in turn.

a. Connectors With Adhesive Shear Strength

The “sufficient shear strength” limitation, we determined above, was not limited to any particular direction of movement. In proposed claim 15, Patent Owner adds a further function of the connectors with shear strength so the carpet tiles “retain their relative positions.” In attempt to overcome Kinoshita’s

teachings, Patent Owner argues that Kinoshita does not mention preventing lateral movement or otherwise retaining tiles in their relative positions. Mot. to Amend 11. Further, Patent Owner argues that retaining tiles would not have been achieved with Kinoshita's tape. *Id.* (citing Ex. 2014 ¶¶ 110–112; Ex. 2017 ¶¶ 111–113). The Declaration testimony cited in support of Patent Owner's argument is not persuasive as stated with respect to the Kinoshita ground concerning claim 1. The proffered testimony focuses on whether conventional tape would prevent gaps or lateral movement. The cited testimony does not address the express teaching in Kinoshita of an installation in which the carpet tiles are laid together in a linked fashion to create carpet C of a certain weight such that the carpet does not rise up or peel off. Ex. 1007 ¶ 17. Kinoshita, thus, teaches or suggests that the laid carpet tiles retain their relative position after installation. Additionally, we are not persuaded that Kinoshita refers only to conventional adhesive tape, and that, therefore, the adhesive tape in Kinoshita would have been known to fail. Kinoshita expressly describes an embodiment in which the backing of the tape and the "adhesive power" is designed for the specific purpose of making installation of carpet tiles easier and linking the underside of the carpet units. *See* Ex. 1007 ¶ 12. This suggests that Kinoshita's adhesive tape is intended for use in carpet tile installations, and not merely some conventional tape that would be expected to fail at maintaining carpet tiles linked as described.

Patent Owner further argues that "more-glued-surface-area-is-better sentiment" would teach away from the recited features. *See* Mot. to Amend 8–10. We find these arguments unpersuasive. Although there was an appreciation for the durability and wearability of full-glue carpet installations, the evidence of record shows that the full-glue installations were specified when heavy traffic was

expected. *See id.* at 9 (citing Exs. 203[2], 2014, 2017, 2030). Arguably, when considering a carpet tile installation for such conditions, the adhesive choice was crucial. Proposed claim 15 captures “foot traffic, rolling traffic, and stresses applied during cleaning and maintenance,” but there is no description in the specification or elsewhere whether such conditions constitute heavy traffic or otherwise. The language of the proposed claim is broad enough to encompass light traffic installations. And, therefore, we are not persuaded that there is sufficient evidence to establish that the “more-glue” sentiment would have dissuaded a person of ordinary skill in the art from a Kinoshita installation for the same traffic conditions encompassed by the limitations added in proposed claim 15. Further, recommendations by some carpet installers of the full-glue installation as the “best” for preventing lateral shifting (Mot. to Amend 9–10) do not mean necessarily that a carpet tile installation with adhesive tape pieces, such as that of Kinoshita, would not have been recognized as an installation option. Indeed, the “Interiors” handbook cited by Patent Owner describes the option of “free lay” carpet tile installations. *See* Ex. 2032, 203 (“In free lay installations, a strip of adhesive is applied about every 4.5 m (15 ft) and around the room perimeter.”). Thus, we are not persuaded that a full-glue installation was the only viable option, and that, therefore, a person of ordinary skill in the art would not turn to the Kinoshita teachings.

b. Resists Stretching

Patent Owner has the burden of showing that it is entitled to the relief requested. 37 C.F.R. § 42.20(c). We begin with claim construction, as that is an important step in determining patentability. *Oakley, Inc. v. Sunglass Hut Int’l*, 316 F.3d 1331, 1339 (Fed. Cir. 2003). A motion to amend claims must identify how

the proposed substitute claims are to be construed, especially when the proposed substitute claims introduce new claim terms. *See Idle Free Sys., Inc. v. Bergstrom, Inc.*, Case IPR2012-00027, slip op. at 7 (PTAB June 11, 2013) (Paper 26).

In its Motion, Patent Owner introduces the phrase “resist stretching sufficiently so that, in an installation of the carpet tiles connected with the connectors, the connectors stabilize the carpet tiles to retain their relative positions in the installation when subjected to foot traffic, rolling traffic, and stresses applied during cleaning and maintenance.” Patent Owner does not provide any claim constructions or explanation for how this phrase, or terms such as “resists stretching sufficiently” and “subjected to foot traffic, rolling traffic,” should be construed. Without a reasonable construction of this alleged new claim feature in proposed claim 15, Patent Owner does not provide adequate information for us to determine whether Patent Owner’s proposed substitute claim is patentable over the prior art generally. Indeed, Petitioner has raised the difficulty of assessing the scope of the term “rolling traffic” without any argument or evidence proffered by Patent Owner in its Motion. Opp. to Mot. to Amend 3–4. Therefore, we are not persuaded that Patent Owner has met its burden to demonstrate patentability of the proposed substitute claim under 37 C.F.R. § 42.20(c).

As for Patent Owner’s burden of demonstrating patentability, we find Patent Owner’s showing deficient. *See Idle Free*, Paper 26, 7. With regard to obviousness as the basis of potential unpatentability of the proposed substitute claim, the patent owner should present and discuss facts which are pertinent to the first three underlying factual inquiries of *Graham*: (1) the scope and content of the prior art, (2) differences between the claimed subject matter and the prior art, and (3) the level of ordinary skill in the art, *with special focus on the new claim*

features added by the proposed substitute claim. The patent owner should identify each new claim feature, and come forward with technical facts and reasoning about that particular feature. *Id.* Some discussion and analysis should be made about the specific technical disclosure of the closest prior art as to each particular feature, and the level of ordinary skill in the art, in terms of ordinary creativity and the basic skill set of a person of ordinary skill in the art, regarding the feature.

Here, we are unpersuaded that Patent Owner has demonstrated by a preponderance of the evidence that the proposed substitute claim is patentable. Patent Owner addresses teachings in Robinson regarding tensile strength and elongation characteristics. Mot. to Amend 15. But Patent Owner does not address the level of ordinary skill in the art with regard to the “resist stretching” feature added by its proposed substitute claim. Alleging that the closest prior art does not disclose the resistance to stretching to retain tiles in place (*id.*) is insufficient. As discussed above, Robinson teaches the characteristics of a pressure-sensitive adhesive, which in combination with Kinoshita, render obvious dependent claim 3. The tensile strength range recited in claim 3 is the very range that the specification of the ’282 patent describes for use in a film that “resists stretching.” Ex. 1001, 5:25–31. Accordingly, based on our determination regarding dependent claim 3, we are not persuaded that the “resist stretching sufficiently” limitation in proposed claim 15 renders novel the proposed claim.

c. Size Limitation

Proposed claim 15 recites a 5% size limitation. Patent Owner argues that this limitation renders claim 15 patentable because the “more-glue” sentiment teaches away from connectors of less than 5% of the surface area of the tiles. Mot.

to Amend. 10; Reply to Opp. to Mot. to Amend 2. Petitioner argues that Owen¹³ teaches a corner connection system for carpet tiles in which the connector area is 4–20% of the area of the carpet tile. Opp. to Mot. to Amend 13. Petitioner states that it would have been obvious to combine Owen with Kinoshita with respect to the size of the corner connector. *Id.*

We addressed this limitation in the Final Written Decision in related proceeding IPR2013-00333. Consistent with that Final Written Decision, we determine that Petitioner has shown that Owen teaches securing a carpet tile with only 4 to 20% of the underside surface in contact with the fibrous projections. *See* Ex. 1048, 4, ll. 5–7. Patent Owner does not dispute that Owen teaches a range commensurate with the recited 5% surface area. The alleged belief that “more-glued-surface-area is better,” even if true, does not negate the fact that Kinoshita teaches a glueless installation of carpet tiles. With that knowledge and the express disclosure in Kinoshita of adhesive tape pieces that are indisputably smaller in surface area than the carpet tiles, we find unpersuasive the argument that a “more-glue” belief would turn a person of ordinary skill in the art away from teachings of glueless attachments, such as those in Kinoshita and Owen.

Kinoshita is a clear and express departure from the “more-glue” belief. Furthermore, neither Kinoshita nor Owen discredits the use of a small connector. Indeed, Owen teaches a range of sizes for corner attachments in carpet installations, albeit with the use of hook-and-loop technology instead of adhesive. It makes sense that one of ordinary skill in the art considering Kinoshita’s small connectors would start with the range of sizes of 4 to 20% of the carpet area taught in Owen. The corner attachments of Owen have the same purpose as the adhesive

¹³ WO 86/01247 (Ex. 1048) (“Owen”).

tape units in Kinoshita, to attach together carpet pieces in a glueless installation. Owen provides the size ranges that Kinoshita suggests because Kinoshita teaches smaller connectors. Given these considerations, we are not persuaded that Patent Owner has shown the patentability of claim 15 with regard to this limitation considering that, under *KSR*, the technique in Owen—of selecting a size for the corner attachments in the range of 4 to 20%—would be recognized by a person of ordinary skill in the art as applicable to improve Kinoshita’s adhesive tape pieces. *See KSR*, 550 U.S. at 417 (“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.”). We find that Owen’s technique would be applicable, and that the combination is merely the application of a known range of sizes of corner attachments in carpet tile installation to improve the size of Kinoshita’s adhesive tape pieces.

Furthermore, we are not persuaded that a person of ordinary skill in the art would not be motivated to achieve the recited size because a person of ordinary skill in the art, instead, would “make Kinoshita’s tape larger to underlie most of not all of the tiles’ undersurfaces to provide lots of adhesive surface area in accordance with the more-glued-surface-area-is-better sentiment.” Mot. to Amend 11 (citing Ex. 2014 ¶ 192). The cited testimony of Mr. Endrenyi ignores the express teachings in the art of free-lay carpet installation options and that the full-glue installations were specified for certain traffic conditions. Starting with the premise that a person of ordinary skill in the art would start the design of a carpet installation system with a full-glue installation is a red herring. Seeking a departure from full-glue, a reasonable starting point is the known free-lay carpet installation, which uses adhesive tape at intervals and at the perimeter. Therefore,

we find it reasonable for a person of ordinary skill in the art to turn to Kinoshita, which expressly teaches small adhesive tape pieces at the corners of the carpet tiles. Indeed, Kinoshita would have been especially applicable since it teaches avoiding glue altogether and no attachments to the floor. Patent Owner's arguments to the contrary are, therefore, not persuasive.

d. Conclusion Regarding Proposed Substitute Claim 15

We conclude from our analysis above that Patent Owner has not met its burden of proving by a preponderance of the evidence that proposed substitute claim 15 is patentable.

2. Ruling on Motion to Amend

The request for entry of proposed substitute claim 15, for the reasons stated above, is *denied*.

III. CONCLUSION

Petitioner has demonstrated by a preponderance of the evidence the unpatentability of the following claims over the following grounds:

- a) claims 1, 2, 5–7, and 9 as anticipated over Pacione;
- b) claims 1, 2, 5–7, and 9–14 would have been obvious over Kinoshita and Pacione;
- c) claims 3 and 8 would have been obvious over Kinoshita, Pacione, and Robinson;
- d) claim 4 would have been obvious over Kinoshita, Pacione, and Matthews.

Because we have found claims 3 and 8 unpatentable as stated above, we need not decide whether alternative asserted grounds based on obviousness relying primarily on Pacione also render the challenged claims unpatentable.

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Patent Owner's Motion to Amend is *denied*.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–14 of the '282 patent have been shown to be unpatentable; and

FURTHER ORDERED that Patent Owner's Motion to Amend is *denied* with respect to the entry of proposed substitute claim 15.

This is a final 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.

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PETITIONER:

Dana E. Stano (Lead Counsel)

Barry J. Herman (Backup Counsel)

Preston Heard

WOMBLE CARLYLE SANDRIDGE & RICE, LLP

Emails: dstano@wcsr.com,

bherman@wcsr.com

pheard@wcsr.com

PATENT OWNER:

John S. Pratt (Lead Counsel)

Eugene B. Joswick III (Backup Counsel)

KILPATRICK TOWNSEND & STOCKTON, LLP

Emails: jpratt@kilpatricktownsend.com,

ejoswick@kilpatricktownsend.com.