Trials@uspto.gov
571-272-7822

Paper 32
Entered: August 11, 2016

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

OWENS CORNING,
Petitioner,

v.

FAST FELT CORPORATION,
Patent Owner.

Case IPR2015-00650
Patent 8,137,757 B2

Before JO-ANNE M. KOKOSKI, KRISTINA M. KALAN, and BRIAN P. MURPHY, *Administrative Patent Judges.*

KOKOSKI, *Administrative Patent Judge.*

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

I. INTRODUCTION

Owens Corning ("Petitioner") filed a Petition ("Pet.") to institute an *inter partes* review of claims 1, 2, 4, 6, and 7 of U.S. Patent No. 8,137,757 B2 ("the '757 patent," Ex. 1001). Paper 1. On August 13, 2015, we instituted an *inter partes* review of claims 1, 2, 4, 6, and 7 on three grounds of unpatentability (Paper 9, "Dec. on Inst."). Fast Felt Corp. ("Patent Owner") filed a Patent Owner Response (Paper 16, "PO Resp."). Petitioner filed a Reply (Paper 20, "Reply").

An oral hearing was held on May 11, 2016. A transcript of the hearing is included in the record (Paper 31, "Tr.").

We have jurisdiction under 35 U.S.C. § 6(b). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has not shown by a preponderance of the evidence that claims 1, 2, 4, 6, and 7 of the '757 patent are unpatentable.

A. The '757 Patent

The '757 patent, titled "Print Methodology for Applying Polymer Materials to Roofing Materials to Form Nail Tabs or Reinforcing Strips," is directed to a method for applying nail tabs to roofing and building cover materials. Ex. 1001, Abstract. According to the '757 patent, the claimed print method is "a gravure, rotogravure or gravure-like transfer printing (the 'gravure process') or offset printing, of an appropriately viscous and substantially polymeric material onto roofing material, or onto a continuous transfer material and then transferred, including utilizing a laminating process, onto the roofing material, in a continuous process." *Id.* at 3:24–30. The '757 patent describes the gravure process as employing a print cylinder

that "has etched or engraved cells of varying depth, width and shape and which cells can be varied to apply differing amounts of tab material as a means of controlling the pattern and other attributes of the resultant nail tab." *Id.* at 3:30–34.

Figure 1 of the '757 patent is reproduced below:

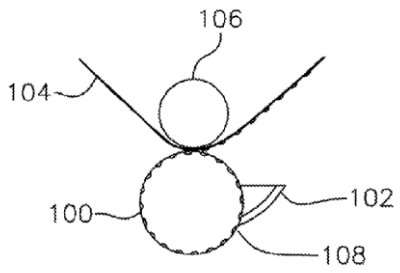

Fig. 1

Figure 1 is a schematic diagram of a print cylinder as described in the '757 patent. *Id.* at 4:65–67. Print cylinder 100 receives viscous tab material from print reservoir 102 into patterns etched on the face of print cylinder 100 and prints a corresponding pattern onto roofing material 104. *Id.* at 7:13–16. Doctor blade 108 removes excess tab material from print cylinder 100, such that tab material remains only in the engraved image area etched into print cylinder 100. *Id.* at 7:18–20. When print cylinder 100 makes contact with roofing material 104 and impression cylinder 106, the viscous tab material is deposited from print cylinder 100 onto roofing material 104. *Id.* at 7:24–27. Roofing material 104 "may be bonded with appropriate rows of nail tabs or continuous reinforcing strips, preferably substantially polymer materials," and can include at least one contrasting color to roofing material 104 and "one or more additives to tailor the polymer material." *Id.* at 7:32–40.

Claims 1 and 7 are independent claims. Claims 2, 4, and 6 directly depend from claim 1, which is reproduced below:

> 1. A method of making a roofing or building cover material, which comprises treating an extended length of substrate, comprising the steps of:
>
> > depositing tab material onto the surface of said roofing or building cover material at a plurality of nail tabs from a lamination roll, said tab material bonding to the surface of said roofing or building cover material by pressure between said roll and said surface.

Ex. 1001, 13:13–20.

Independent claim 7 is reproduced below:

> 7. A method of making a roofing or building cover material, comprising the steps of first depositing nail tab material at a plurality of locations on said roofing or building cover material, said nail tab material is substantially made of a polymeric material, and subsequently pressure adhering said nail tab material into nail tabs on said roofing or building cover material with a pressure roll.

Id. at 14:11–17.

B. Prior Art

The pending grounds of unpatentability in this *inter partes* review are based on the following prior art:

Reference	Description	Date	Exhibit No.
Hefele	U.S. 5,101,759	April 7, 1992	1004
Bayer	U.S. 5,597,618	Jan. 28, 1997	1007
Lassiter	U.S. 6,451,409 B1	Sept. 17, 2002	1003
Eaton	U.S. 6,875,710 B2	April 5, 2005	1005

C. Pending Grounds of Unpatentability

This *inter partes* review involves the following grounds of unpatentability:

References	Basis	Challenged Claims
Lassiter and Hefele	§ 103(a)	1, 2, 4, 6, 7
Lassiter and Bayer	§ 103(a)	1, 2, 4, 6
Lassiter and Eaton	§ 103(a)	1, 2, 4, 6, 7

Dec. on Inst. 26.

II. ANALYSIS

A. Claim Interpretation

We interpret claims of an unexpired patent using the "broadest reasonable construction in light of the specification of the patent in which [the claims] appear[]." 37 C.F.R. § 42.100(b); *see also Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) ("We conclude that [37 C.F.R. § 42.100(b)] represents a reasonable exercise of the rulemaking authority that Congress delegated to the Patent Office."). The Board, however, may not "construe claims during IPR so broadly that its constructions are *unreasonable* under general claim construction principles. . . . '[T]he protocol of giving claims their broadest reasonable interpretation . . . does not include giving claims a legally incorrect interpretation.'" *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015) (citation omitted). "Rather, 'claims should always be read in light of the specification and teachings in the underlying patent'" and "[e]ven under the broadest reasonable interpretation, the Board's construction 'cannot be

divorced from the specification and the record evidence.'" *Id.* (citations omitted). Only those terms in controversy need to be construed, and only to the extent necessary to resolve the controversy. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

For purposes of the Decision on Institution, we determined that the terms in the challenged claims did not need to be construed expressly. Dec. on Inst. 5. Based on our review of the complete record and the claim construction arguments raised by the parties, for purposes of this Final Written Decision we determine that it is necessary to address the following claim terms or elements expressly: the preambles of claims 1 and 7, "roofing or building cover material," "treating an extended length of substrate," and "nail tab."

1. Preambles of Claims 1 and 7

In general, a preamble is construed as a limitation "if it recites essential structure or steps, or if it is 'necessary to give life, meaning, and vitality' to the claim." *Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2012) (quoting *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999)). When the limitations in the body of the claim "rely upon and derive antecedent basis from the preamble, then the preamble may act as a necessary component of the claimed invention." *Eaton Corp. v. Rockwell Int'l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003).

The preamble of claim 1 recites "[a] method of making a roofing or building cover material, which comprises treating an extended length of substrate, comprising the steps of," and the body of claim 1 includes the claim term "said roofing or building cover material." Similarly, the

preamble of claim 7 recites "[a] method of making a roofing or building cover material, comprising the steps of," and the body of claim 7 includes the claim term "said roofing or building cover material." Accordingly, we conclude that the claim term "roofing or building cover material" that appears in the preambles of claims 1 and 7 is entitled to patentable weight.

2. "roofing or building cover material"

Independent claim 1 recites, in relevant part, "depositing tab material onto the surface of said roofing or building cover material" and "said tab material bonding to the surface of said roofing or building cover material by pressure between said roll and said surface." Likewise, independent claim 7 recites "first depositing nail tab material at a plurality of locations on said roofing or building cover material" and "pressure adhering said nail tab material into nail tabs on said roofing or building cover material with a pressure roll." Although Patent Owner "agrees that no express construction may be necessary for any claim terms," Patent Owner states that "[a]t least some consideration of 'roofing or building cover material' used in each independent claim may be useful." PO Resp. 19.

In its Response, Patent Owner contends that "any proper construction of roofing or building cover material does not mean paper alone and instead includes materials that make a roof resistant to water intrusion such as heavily asphalt coated substrates like the underlayment and/or shingle materials on most roofs in North America." PO Resp. 21 (footnote omitted). As support for this contention, Patent Owner cites the Specification's Background of the Invention section describing roofing composition, which states that "[t]he first layer is an underlayment, usually a substantially asphalt saturated substrate material that attaches directly to the roof deck,"

and "[d]ry felt, when saturated with an asphalt-based material, produces an underlayment roofing material known in the trade as 'tar paper' or 'saturated felt.'" *Id.* (citing Ex. 1001, 1:29–2:11). Patent Owner also argued at the oral hearing that "the claims at issue pertain to the roofing or building covering material, which is the external part of a building or roof." Tr. 21:22–24. According to Patent Owner, "a roofing or building cover material, as understood in the context of these claims, is an asphalt saturated substrate." *Id.* at 23:7–9.

Petitioner responds that, "[w]ith regard to what types of surfaces of roofing or building cover materials can be printed on," the Specification "discloses nail tab material can be deposited on saturated or unsaturated substrates." Reply 5. Petitioner points to the Specification's description of roofing material that "comprises a base substrate material or a saturated or coated substrate material," and that nail tabs can be deposited onto the roofing material at any point during the manufacturing process, "including immediately before or after the dipping of the substrate roofing material into the asphalt or asphalt mix tank." *Id.* at 5–6 (citing Ex. 1001, 4:41–45, 6:65–7:3). Petitioner further argues that paper is a roofing or building cover material because several prior art references, including Lassiter, state that "roofing paper," "felt roofing paper," and "tar paper" can serve as roofing cover material. *Id.* at 19 (citing Ex. 2017, 1:13–15, 1:42–44, 2:48–49; Ex. 1003, 1:34–35).

We are not persuaded by Patent Owner's argument that "roofing or building cover material" is limited to asphalt saturated substrates. *See* PO Resp. 20–21. The Specification consistently states that nail tabs can be affixed to base substrate materials whether or not they are coated with

asphalt. Ex. 1001, 5:63–6:2 (stating that the invention discloses "an improved method in which tabs can be permanently and reliably affixed or bonded to either dry felt, saturated felt, a fiberglass, polyester or other inorganic substrate roofing material whether or not coated with asphalt or an asphalt mix"); *see also id.* at 4:30–39 (describing a preferred embodiment wherein "the tab material solidif[ies] and adher[es] to the surface of the base substrate material or saturated or coated material"); *id.* at 4:40–49 (describing another preferred embodiment of "a roofing material which comprises a base substrate material or a saturated or coated material and a plurality of thermoplastic, thermosetting, adhesive or elastomer tabs deposited onto the surface of the base substrate, saturated or coated material"). The Specification states:

> [T]he above described invention can be employed directly onto the roofing material, at any point during the manufacture of commercially saleable rolls of saturated felt or tar paper, or other roofing material, including immediately before or after the dipping of the substrate roofing material into the asphalt or asphalt mix tank, or after the manufacturer [*sic*] of any rolled roofing or shingle product.

Id. at 6:65–7:4. The Specification also defines "substrate" to include "all suitable starting base materials including dry felt, fiberglass mat and polyester mat or any other base material on which a composite roofing or building material is built upon." *Id.* at 1:67–2:4. Based on this explicit definition, dry felt is a substrate as that term is used in the '757 patent, but dry felt starting materials (such as rag, paper, and wood sawdust) are not. *See id.* at 1:62–67 ("The starting base material, in a preferred embodiment, is a fibrous paper called dry felt made from treating recycled cardboard, mixed recycled papers and wood sawdust or a fibrous mat made from inorganic

materials chemically or mechanically formed into a fibrous state."). We also note that the Summary of the Invention section of the Specification, as well as every described embodiment, specifically is directed to the application of nail tabs to roofing material. *See id.* at 3:24–4:60, 5:50–13:4.

These disclosures in the Specification indicate that, while the described process can be used to deposit nail tabs on an asphalt saturated or coated substrate, it is also the case that the process can be used to deposit nail tabs on a base substrate before asphalt coating. Indeed, in describing several preferred embodiments, the Specification explicitly states that nail tabs may be deposited on base substrate material *or* saturated material. *See, e.g., id.* at 4:30–49 (describing preferred embodiments where tab materials adhere to "base substrate material or saturated or coated material"); *id.* at 7:27–32 ("In a preferred embodiment, roofing material 104 may be comprised of a composite of materials, including the base substrate roofing material (roofing material prior to its saturation or coating with a substantially asphalt or asphalt-mix material), or the final condition underlayment, roll roofing or shingle material."); *id.* at 9:34–36 ("Roofing material 402 is understood to include, but not limited to, substrate roofing or composite roofing material or shingle material.").

Accordingly, we interpret "roofing or building cover material" to mean "base substrate materials such as dry felt, fiberglass mat, and/or polyester mat, before coating or saturation with asphalt or asphalt mix, and asphalt coated or saturated substrates such as tar paper and saturated felt."

3. "treating an extended length of substrate"

The preamble of claim 1 recites that the method of making a roofing or building cover material "comprises treating an extended length of

substrate." Patent Owner contends that "treating an extended length of substrate" is "the first step" of claim 1, and "involves impregnating, saturating, or otherwise surrounding the mat fibers with asphalt as stated in the specification." PO Resp. 10 n.2; *see also id.* at 14 ("[T]he first step of Claim 1 of the '757 Patent – 'treating an extended length of substrate' – involves the conventional impregnating, saturating, or otherwise surrounding or coating the mat fibers with asphalt – as stated in the specification."). As support for this contention, Patent Owner cites to the Specification's statement that "[d]ry felt or fiberglass mat material undergoes treatment in conventional fashion to impregnate, saturate or otherwise surround or coat the organic or fiberglass and polyester mat fibers with asphalt to produce an asphalt saturated felt, mat or substrate material." *Id.* (citing Ex. 1001, 7:50–54). Patent Owner also argued at the oral hearing that "the difference between independent claim 1 and independent claim 7 is exactly that treating step," because claim 7 "starts with the roofing or building cover material and then deposits on to that" and "doesn't have that limitation of first doing the treating step." Tr. 20:1–5.

Other than its recital in claim 1, the Specification only uses the phrase "treating an extended length of substrate" once, in the following passage:

> In accordance with a preferred embodiment of the invention, there is disclosed a method of making a roofing material, which comprises *treating an extended length of substrate* roofing material or composite roofing material having the steps of depositing tab material substantially in a liquid state onto the surface of the roofing material at a plurality of locations, the tab material solidifying and bonding to the surface of the roofing material wherein the tab material is deposited on the roofing material by an engraved pattern print roll.

Ex. 1001, 4:15–23 (emphasis added). Here, "treating an extended length of substrate" is followed by the steps that describe how the "extended length of substrate" is treated, that is, by depositing tab material onto the surface of the roofing material. There is nothing in this passage that suggests that "treating an extended length of substrate" means impregnating, saturating, or otherwise surrounding or coating the substrate with asphalt to produce an asphalt saturated felt, mat, or substrate material. When read in the context of the Specification as a whole, "treating an extended length of substrate roofing material or composite roofing material" refers to the steps of depositing tab material on substrate roofing materials (such as dry felt, fiberglass mat, or polyester mat) or on a final condition underlayment (such as tar paper or saturated felt, which is asphalt saturated).

Although Patent Owner directs our attention to a statement in the Specification that describes how base substrate materials are treated to become asphalt saturated felt, mat, or substrate material, it does not follow that "treating an extended length of substrate" as used in claim 1 necessarily refers to that treatment as Patent Owner contends. The statement to which Patent Owner refers appears in a description of a gravure method for laying substantially polymer material tabs on roofing material, with reference to Figure 1. The Specification states:

> In a process such as described herein, roofing material 104 may be bonded with appropriate rows of nail tabs or continuous reinforcing strips, preferably substantially polymer materials, specifically including but not limited to, thermoplastic-based or thermo-setting material, hot-melt adhesive material, elastomeric material or ultra-violet light curing materials, and may include at least one contrasting color to the roofing material 104 and one or more additives to tailor the polymer material. As is well known in the art, roofing material 104 can be comprised of a substrate

> roofing material or of a composite roofing material, made starting with a substrate roofing material, including a roll of dry felt, fiberglass, polyester or a combination thereof, mat material. In a preferred method of producing the roofing material in accordance with this invention, the substrate, dry felt or fiberglass and polyester mat material is introduced to the beginning of a continuous and automated process having a system of driven rollers for transporting roofing material 104 through the process. Dry felt or fiberglass mat material undergoes treatment in conventional fashion to impregnate, saturate or otherwise surround or coat the organic or fiberglass and polyester mat fibers with asphalt to produce an asphalt saturated felt, mat or substrate material.

Ex. 1001, 7:32–54. Taken as a whole, these disclosures indicate that the steps of treating dry felt or fiberglass material with asphalt can be performed in a continuous process with the steps of depositing and adhering nail tabs onto the roofing material, but there is no indication that the asphalt treatment must be part of the process, or that it must occur before the nail tabs are applied to the roofing material.

Moreover, we are not convinced by Patent Owner's argument that claims 1 and 7 only differ in that the "treating an extended length of substrate" language in claim 1 requires that the substrate be asphalt saturated, and claim 7 does not have such a requirement. *See* Tr. 20:1–5. Claims 1 and 7 differ in more ways than just the inclusion of the "treating an extended length of substrate" language in claim 1. For example, claim 7 recites that the "nail tab material is substantially made of a polymeric material," whereas claim 1 does not include any statement regarding the composition of the tab material.[1] Additionally, claim 1 recites that the tab

[1] Claim 2, which depends from claim 1, further recites that "said tab material is substantially a polymer material." Because dependent claim 2 is narrower

material is deposited onto the surface of the roofing or building cover material "at a plurality of nail tabs from a lamination roll," and claim 7 simply recites "first depositing nail tab material at a plurality of locations on said roofing or building cover material."

We further observe that "treating an extended length of substrate" is not repeated in the body of claim 1, nor in the claims that depend therefrom. Thus, it does not appear to provide any antecedent basis support for any of the elements of the claims. Indeed, all the term "treating an extended length of substrate" appears to do is give a descriptive name to the set of limitations that completely set forth the invention. In such an instance, preamble language does not limit the claims. *See IMS Tech., Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1434 (Fed. Cir. 2000) ("The phrase 'control apparatus' in the preamble merely gives a descriptive name to the set of limitations in the body of the claim that completely set forth the invention. Its use does not limit the claims . . . .").

Reading the claim as a whole and applying the broadest reasonable construction of the claim language in light of the Specification, we conclude that the "treating an extended length of substrate" language in the preamble of claim 1 is not a limitation. Accordingly, we find that claim 1 does not preclude depositing tab material onto base substrate materials that are not asphalt coated or saturated.

---

than independent claim 1, claim 1 encompasses tab material other than that which is "substantially a polymer material" as is recited in claim 2 (and in independent claim 7).

4. "nail tab"

Claim 1 recites "a plurality of nail tabs," and claim 7 recites "nail tabs on said roofing or building cover material." Although neither party proposed an interpretation of "nail tabs," based on our review of the complete record, we address the interpretation of this claim term.

In its Response, Patent Owner argues that "it is well-established in the art that nail tabs and their precursor tin or plastic caps are employed to provide strength or reinforcement to roofing cover materials such as heavily asphalt coated substrates like underlayments and shingles." PO Resp. 21–22. According to Patent Owner, "[t]hat a nail tab has a reinforcement function to prevent nail head pullout and nail pull-through" is "consistent with the description provided" in the '757 patent, where the problem described is "tearing of the roofing material at the fastening locations" that "may be ameliorated by installing asphalt roofing cover material using 'roofing nails with large heads' or a 'large washer or tab that lies underneath the nail head' . . . ." *Id.* at 23–24 (quoting Ex. 1001, 2:21–29, 44–63). Patent Owner also argued at the oral hearing that "[n]ail tab as its plain and ordinary meaning has a reinforcing function" and that "it is an alternative to the tin caps and the prior caps that were used, washers, to hold the roofing or other building cover material in place." Tr. 23:23–24:2.

Petitioner responds that "[t]he claims do not recite nail tab 'thickness,' 'volume,' 'shape,' 'visibility,' 'reinforcement,' 'pullout' or 'pull-through,' 'burst strength,' 'tear resistance,' or 'rupture strength' as limitations." Reply 17. At the oral hearing, when asked if it was Petitioner's position that "nail tab" would be the material that is deposited onto the building or roofing cover material, Petitioner responded:

> I think, under the broadest reasonable interpretation, yes. Otherwise it seems to be a slippery slope. How do you know which of the particular characteristics? Is it all of them? Is it one of them? Is it some of them that are disclosed in the specification, you know, there is no guidance in that regard that it has to be a certain class of characteristics or not.

Tr. 38:23–39:4.

We agree with Patent Owner that the nail tab provides reinforcement to roofing or building cover materials. The Specification states that "it is desirable that the underlayment be securely attached independently of the shingles, wood shakes, metal tile or other roof covering not only in the pre-shingling or pre-roof covering stage of installation, but also in the final installation" because "[w]hen the underlayment is not securely fastened, then the underlayment may be blown away or ripped concurrently with shingle damage" under adverse weather conditions. Ex. 1001, 2:31–41. The Specification also states that using an auxiliary large washer or tab that lies underneath the nail head "successfully resists being torn through," but that the use of such washer or tab "is time consuming, somewhat expensive, and can be somewhat dangerous" because it requires "two hands to either slip the washer over the nail or to hold a tab down while driving the nail through." *Id.* at 2:45–55. The Specification further states that the use of roofing nails with large heads is "not recommended both because they are expensive and because they cannot be used in ordinary power equipment." *Id.* at 2:59–61. Therefore, according to the Specification, "[i]t is an advantage of the present invention" to provide a method for applying "polymer nail tabs or continuous strips to underlayment or other roofing material." *Id.* at 2:64–67.

These disclosures in the Specification indicate that the nail tabs that are applied to the roofing or building cover material by the claimed process are intended to serve the same purpose as auxiliary washers or tabs, which is to securely install the roofing or building cover material in order to avoid ripping or tearing under adverse weather conditions. Accordingly, we interpret "nail tab" to mean "tab that lies underneath a nail head that reinforces the nail against pullout and tear through."

B. Level of Ordinary Skill in the Art

Petitioner contends that the level of ordinary skill in the art "is appropriately reflected in the disclosure of the prior art references." Pet. 14. Petitioner contends that the prior art indicates that a person having ordinary skill in the art "would be familiar with various methods of printing polymer on various substrates and for various purposes," "would understand various types of polymers can be printed using these methods," and "would be aware various methods of printing polymer are interchangeable and provide for predictable results." *Id.* Petitioner also contends that the '757 patent states that "[t]he invention is to the print method, a gravure, rotogravure or gravure-like transfer printing (the 'gravure process') or offset printing" and that "[t]he word 'print' or its form is used over 100 times in the '757 Patent specification and in connection with every embodiment and drawing Figure." Reply 23 (citing Ex. 1001, 3:24–26). According to Petitioner, "one of ordinary skill in the art would possess at least a bachelor's degree with knowledge of various printing methods and several years of industry experience in the printing field." Pet. 14.

Patent Owner disagrees, and argues that "the ordinary skilled artisan would be a person skilled in the field of roofing materials such as asphalt

shingles" and "would have a bachelor's degree and approximately 3–5 years of additional training and experience in the field of manufacturing roofing materials with asphalt substrates." PO Resp. 13. Patent Owner argues that "an ordinarily skilled artisan in the field of the '757 patent would minimally understand" the manufacturing and basic properties of asphalt coated substrates, and the requirements of roofing or building cover materials with respect to adverse weather conditions. *Id.* at 15. According to Patent Owner, a person skilled only "in the art of printing/graphics and substrates used therein would not understand the processing issues associated with applying polymer materials to roofing materials such as heavily asphalt coated substrates to obtain nail tabs." *Id.* at 16.

Factors to be considered in determining the relevant art for purposes of addressing patent validity include the nature of the problem confronting the inventor, the type of skills needed to understand the patent disclosure, and the type of art applied to the application in the Patent and Trademark Office ("PTO"). *Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1008–09 (Fed. Cir. 1983). Here, the Specification states that the invention specifically relates to "roofing material or other building materials normally employed as cover materials over a wood roof deck or stud wall" and to "methods for incorporating therein a plurality of integrally formed nail tabs or a continuous reinforcing strip." Ex. 1001, 1:29–34. The task that the inventors of the '757 patent faced was to devise a process for the application of polymer nail tabs or continuous strips that provide reinforcement against nail pullout and pull-through to roofing or building cover materials. *Id.* at 2:44–67. To solve this problem, knowledge from at least the field of manufacturing roofing or building cover materials is needed.

In addition, much of the Specification details automated processes for "permanently and reliably" affixing or bonding "appropriately viscous tab material that quickly solidifies and adheres or bonds to the surface" of "either dry felt, saturated felt, a fiberglass, polyester or other inorganic substrate roofing material whether or not coated with asphalt or an asphalt mix, or roll roofing material or shingles." *Id.* at 5:63–6:2. The automated process as described in the Specification

> is a gravure, rotogravure, intaglio or gravure-like transfer printing process (the "gravure process"), or an offset printing process which employs a print cylinder that directly prints an engraved pattern onto the roofing material or onto a continuous transfer material and then presses or laminates that pattern onto the roofing material, in a continuous process which utilizes pressure, whether or not the actual pattern shape survives the use of pressure and the result could be the tab material or continuous strip material appears more evenly distributed on the roofing material.

Id. at 6:11–20; *see also id.* at 3:24–30 ("The invention is to the print method, a gravure, rotogravure or gravure-like transfer printing (the 'gravure process') or offset printing, of an appropriately viscous and substantially polymeric material onto roofing material, or onto continuous transfer material and then transferred, including utilizing a laminating process, onto the roofing material, in a continuous process."), 7:11–8:29 (describing the "basic gravure method for laying substantially polymer material tabs on the roofing material" shown in Figure 1), 8:62–9:6 (describing a preferred embodiment of a gravure print apparatus shown in Figure 2). Therefore, knowledge from the field of gravure or offset printing is also needed to solve the problem that was facing the inventors here, as well as to understand the disclosures in the Specification.

Additional support for the conclusion that the pertinent art includes both the fields of manufacturing roofing and building cover materials and gravure or offset printing comes from the fact that the prior art considered by the PTO during prosecution of the application that issued as the '757 patent included art directed to roofing material manufacture as well as art directed to the application of polymer tabs using roller applications. For example, in the December 28, 2010 Office Action, the Examiner applied Lassiter (Ex. 1003), which "teaches a process for the formation of integral nail tabs on the surface of a roofing cover by application of a polymer material in a liquid," in combination with Halley (WO 98/06891 A1), which "teaches a process in which a polymeric material is applied to a substrate in a specific pattern in which the pattern is applied under the pressure of pressure roller 28 and gravure roller 30," in rejecting original claims 7–9 under 35 U.S.C. § 103(a). Ex. 1002, 101–102.[2]

The foregoing reasons support a finding that knowledge of both manufacturing of roofing or building cover materials and gravure/offset printing are relevant, and necessary, to understand the '757 patent. Accordingly, we find that both roofing or building cover materials manufacturing and gravure/offset printing are pertinent fields of endeavor in this case, and the appropriate level of ordinary skill in the art is further explained by the references themselves. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the level of ordinary skill in the art usually is evidenced by the references themselves).

[2] The cited page number in Exhibit 1002 refer to the numbers added by Petitioner at the bottom of each page.

C. Expert Qualifications to Testify as to the Knowledge of One of Ordinary Skill in the Art

In support of the Petition, Petitioner submitted the Declaration of Harvey R. Levenson ("the Levenson Declaration," Ex. 1014). Patent Owner asserts that Dr. Levenson is "a less than ordinarily skilled artisan in the relevant field of the '757 Patent claims," and his testimony should be entitled to little or no weight. PO Resp. 18. Patent Owner's argument is based on its contention that the field of roofing and building cover materials is the pertinent art in this case. *Id.* at 16. Patent Owner points out that Dr. Levenson "could not explain how 'paper is changed into what becomes the roofing or building cover material'" because he is "an expert in printing, not in roofing, creating roofing material." *Id.* at 17 (quoting Ex. 2005, 15). Patent Owner also argues that Dr. Levenson "could not describe other purposes of a nail tab," "could not comment on the first step of Claim 1 of the '757 patent that states 'treating an extended length of substrate,'" "was not familiar with 'any regulatory requirements for roofing products such as shingles,'" and "did not 'know what was used before Lassiter's nail tabs, as far as providing the reinforcement to saturated felt or coated felt materials.'" *Id.* at 17–18 (quoting Ex. 2005, 27, 40, 63, 66).

With its Response, Patent Owner submitted the Declarations of William E. Todd ("the Todd Declaration," Ex. 2003) and Dr. Mark Bohan ("the Bohan Declaration," Ex. 2004). Petitioner contends that the opinions of Mr. Todd and Dr. Bohan "should be given little [or] no weight." Reply 24. Petitioner's argument is based, in part, on its contention that "the '757 Patent is overwhelmingly directed to print methodology," and both Mr. Todd and Dr. Bohan "assert printing is not the correct art of the '757 Patent." *Id.* at 25 (citing Ex. 2003, 20; Ex. 2004, 12). Petitioner further

argues that Mr. Todd "concedes he is not qualified to opine on printing matters," and Mr. Todd and Dr. Bohan both conceded that they "only considered a validity analysis where the substrate was heavily asphalt saturated and did not consider an analysis where the substrate was unsaturated," which "is significant because the claims do not recite 'asphalt' saturated substrates." *Id.* (citing Ex. 1022, 11:18–20, 14:12–15:6; Ex. 1021, 68:13–18, 39:11–70:76).

As is set forth above, we determine that both roofing or building cover materials manufacturing and gravure/offset printing are pertinent arts in this case. *See supra,* Section II.B. Dr. Levenson has been in the graphic communication industry for 53 years, holds four degrees in printing and communication, and was a long-time professor of graphic communication, where his teaching and research specialties included printing and publishing. Ex. 1014 ¶¶ 2–7, Attachment A. Dr. Levenson also testified that he has experience with numerous types of print substrates, including paper, fabric, wood, floor coverings, boards, felts, "[b]asically substrates of all qualities of thicknesses, of smoothness, or roughness" (Ex. 2005, 6:3–10), and that traditional gravure printing can be used with "[n]early all of the substrates that I previously mentioned" (*id.* at 7:15–18). We are persuaded, based on the facts in this record, that Dr. Levenson is qualified to testify as to the knowledge of a person of ordinary skill in the art of gravure/offset printing. Dr. Levenson, however, does not have any demonstrated expertise in the field of roofing and building cover materials, and therefore is not qualified to testify as to the knowledge of a person having ordinary skill in the art of manufacturing roofing and building cover materials.

Mr. Todd has almost 30 years of experience in the field of roofing and building materials, including experience in the "development of all product installation procedures, packaging design, compliance to appropriate Building Codes and Industry Standards as well as meeting customer expectations." Ex. 2003 ¶ 2. Mr. Todd testified that he has "significant, hands on experience building houses, roofing houses, as well as managing the same operations," and that he "understand[s] the requirements of design for roof covering materials regarding installation, weather resistance and long term performance." *Id.* ¶ 4. As part of his responsibilities at Atlas Roofing Corporation, Mr. Todd "work[ed] closely with plant Production Management, Quality Control and production line personnel to design and develop new asphalt saturated underlayment materials, synthetic underlayment, and high performance asphalt shingles." *Id.* ¶ 8. Based on the evidence of record, we are persuaded that Mr. Todd is qualified to testify as to the knowledge of a person of ordinary skill in the art of manufacturing roofing and building cover materials. *See generally* Ex. 2003 ¶¶ 2–12, Appendix A.

Dr. Bohan has over 25 years of experience in the field of graphic communications, conducted research investigating printing processes from a manufacturing perspective, and formed and managed a large research group in rotogravure printing. Ex. 2004 ¶¶ 1–6, Appendix A. Dr. Bohan testified, "I believe I'm qualified to be an expert in printing due to the body of work that I have done, my education, the research, the activities that I have participated in." Ex. 1021, 19:8–13. We are persuaded, based on the facts in this record, that Dr. Bohan is qualified to testify as to the knowledge of a person of ordinary skill in the art of gravure/offset printing.

With respect to the weight to be given to any particular expert testimony, to the extent an expert is familiar with one relevant field and not the other, we weigh the expert's testimony accordingly, taking into account the extent of the expert's expertise in the field. *See, e.g.*, *Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010) (holding the Board has discretion to give more weight to one item of evidence over another "unless no reasonable trier of fact could have done so").

D. Obviousness over Lassiter and Hefele

Petitioner asserts that claims 1, 2, 4, 6, and 7 would have been obvious under 35 U.S.C. § 103(a) over the combination of Lassiter and Hefele, and relies on the Levenson Declaration. Pet. 19–34; Reply 7–11, 14–18. Patent Owner disagrees with Petitioner's assertions and relies on the Todd Declaration and the Bohan Declaration. PO Resp. 28–36, 48–59.

To prevail on its patentability challenge, Petitioner must establish facts supporting its challenge by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). A claim is unpatentable under 35 U.S.C. § 103 if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious to a person having ordinary skill in the art to which the subject matter pertains. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 406 (2007). A party that petitions the Board for a determination of obviousness must show that "a skilled artisan would have been motivated to combined the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so." *Procter & Gamble Co. v. Teva Pharms. USA, Inc.*, 566 F.3d 989, 994

(Fed. Cir. 2009) (quoting *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007)).

1. Overview of Lassiter

Lassiter is directed to roofing or other building materials, used as cover material prior to installing shingles or external siding, which incorporate "a plurality of integrally formed nail tabs." Ex. 1003, 1:10–15.

Figure 1 of Lassiter is reproduced below:

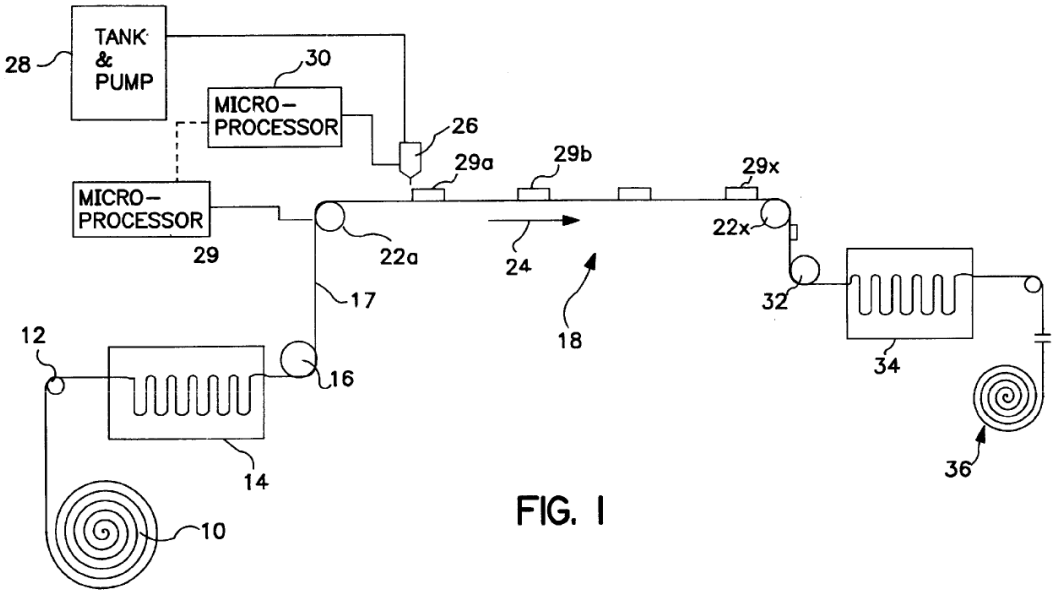

FIG. 1

Figure 1 is a schematic side view of Lassiter's automated process for manufacturing roofing materials. *Id.* at 4:24–26. Dry felt material is conveyed from roll 10 using drive roller 12 to treatment area 14, where it is saturated with asphalt "in conventional fashion." *Id.* at 4:52–55. The saturated felt material exits treatment area 14 and is cooled using water-cooled chill roll 16, and continues the process as saturated felt material 17. *Id.* at 4:60–61, 5:9–10. Saturated felt material 17 is driven by plurality of drive rollers 22_a–22_x in direction 24 through nail tab production area 18. *Id.* at 5:10–12. Thermoplastic material is provided from pressurized supply

tank and pump system 28, and is dispensed from nozzle or nozzle sets 26 onto the surface of saturated felt material 17, forming tabs 29_a, 29_b–29_x. *Id.* at 5:19–22, 61–62. Saturated felt material 17 with attached tabs 29 exits nail production area 18, passes by grooved wheel 32, and then enters free looper 34 to roller area 36, where the final rolls are produced. *Id.* at 6:4–9.

Lassiter states that the thermoplastic material used to make the tabs can include "one or more suitable adhesives that enhance the bonding of the material to the surface of the saturated felt material," and can also include contrasting dye color. *Id.* at 5:27–33. The thermoplastic material "must be either fast-cooling or fast-setting so that it bonds and solidifies to the surface of the saturated felt before it leaves" nail tab production area 18. *Id.* at 5:44–46. Lassiter describes that "[t]he tabs, as they are bonded to the material, are tough, but remain flexible or pliable and not brittle." *Id.* at 5:47–48.

2. Overview of Hefele

Hefele is directed to a method and device for forming a grid-like coating on web-like flexible planar members. Ex. 1004, 1:6–7. According to Hefele, "[c]oated interlining materials on the basis of weaves, textiles, woven textile goods, fleeces, knitted fleeces, and woven knitted fleeces can be manufactured," and "coated synthetic leather, foils, papers, and foam materials can be produced without problems." *Id.* at 2:67–3:3.

Figure 1 of Hefele is reproduced below:

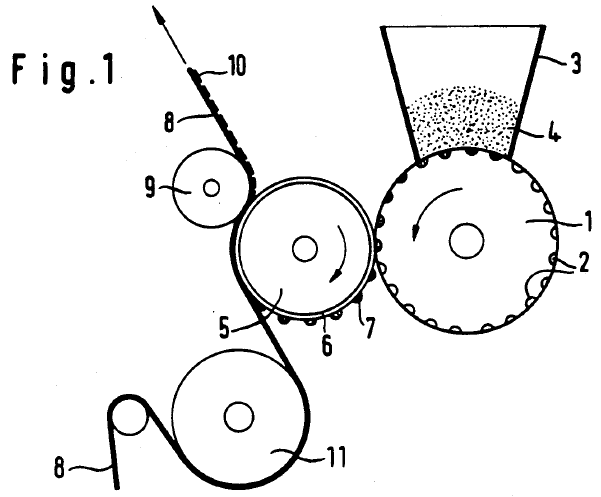

Figure 1 is a schematic section and side view of the device described in Hefele. *Id.* at 3:11–12. Funnel-shaped supply container 3, containing fusion adhesive powder 4, is located directly above gravure roller 1. *Id.* at 3:18–20. Cup-shaped depressions 2 are provided on the surface of gravure roller 1. *Id.* at 3:20–21. Fusion adhesive powder 4 flows out of the bottom of funnel-shaped supply container 3 and into cup-shaped depressions 2 on gravure roller 1. *Id.* at 3:22–26. Gravure roller 1 rotates such that cup-shaped depressions 2, filled with fusion adhesive powder 4, are moved to heated roller 5. *Id.* at 3:29–32.

Heated roller 5, covered with anti-adhesive rubber coating 6, rotates in the direction of the arrow illustrated in Figure 1 and "is pressed relatively strongly onto" gravure roller 1. *Id.* at 3:33–36. Fusion adhesive powder 4 in cup-shaped depressions 2 are transferred onto rubber coating 6 of heated roller 5, and remain there as powder agglomerates 7. *Id.* at 3:36–40. Planar structure 8 is guided across pre-heating roller 11 and between heated roller 5 and associated roller 9, pressing planar structure 8 against heated roller 5.

Id. at 3:46–52. Powder agglomerates 7 are transferred to planar structure 8, forming grid-like coating 10 on planar structure 8. *Id.* at 3:56–63.

3. Analysis

Petitioner contends that "Lassiter clearly discloses printing polymer nail tabs on roofing or building cover materials using nozzle-based print methods" and "Hefele discloses using a transfer or lamination roll to print polymer tabs on a wide range of substrates and materials, including on roofing and building cover materials (*i.e.*, foils, papers, and foam)." Pet. 19–20. Petitioner contends that Figure 1 in Hefele demonstrates "that pressure between the lamination/heated roller 5 and the surface of the web material 8 is used to bond the polymeric tab material 7 to the web 8." *Id.* at 23–24. Citing the Levenson Declaration as support, Petitioner further contends that "Hefele discloses as a result of the 'pressure of the material web 8 [*i.e.*, surface] against the heating roller 5 [*i.e.*, lamination roll] and its previous winding with the material web,' the polymeric material 7 transfers and bonds to the web 8 where it forms tabs 10." *Id.* at 24 (brackets in original) (quoting Ex. 1004, 3:56–4:2).

Petitioner contends that "[i]t would have been obvious for one of ordinary skill to modify the nozzle-based method of Lassiter to instead include the offset method of Hefele that uses a lamination roll" because an advantage of Hefele's offset gravure method "is a wide variety of surface structures can be printed on or coated, even those which 'cannot be coated or can only be coated with difficulty in the direct coating method' and eliminates the need for additional structures and expense." Pet. 24–25 (quoting Ex. 1014 ¶¶ 40–41). Petitioner contends that "[o]ne of ordinary skill would certainly be aware of such an advantage which would allow

Lassiter to print nail tabs on a wider range of substrates in [a] predictable manner," and "would also be aware of other advantages offered by gravure and offset printing including simplicity in components and operation, ability to be automated, high print quality, high printing speeds, and ability to be combined with other processes." *Id.* at 25. Petitioner further contends that "both Lassiter and Hefele are directed to printing polymers on various substrates including on roofing or building cover materials (*i.e.*, both references print on 'paper,' which Lassiter notes is a roofing or building cover material)," and, "[a]s such, they are a simple substitution of one well known process (*i.e.*, nozzle printing) for another (*i.e.*, roll-based printing) and yield predictable results." *Id.* at 20.

Patent Owner makes three main arguments with respect to claim 1: (1) the combination of Lassiter and Hefele cannot make a nail tab; (2) Hefele does not disclose pressure bonding of tab material to a substrate; and (3) a person having ordinary skill in the art would not have been motivated to combine Lassiter and Hefele. We address each in turn below.

First, Patent Owner argues that the combination of Lassiter and Hefele cannot make a nail tab as required by claim 1.[3] PO Resp. 54. Patent Owner argues that the powder agglomerates transferred by Hefele would form a somewhat flattened grid-like coating that "will not function as a nail tab because the tiny discontinuous polymer structures would not be able to stop or slow the head of a nail from pulling through a roofing substrate." *Id.* at 31. Citing the Todd and Bohan Declarations as support, Patent Owner argues that the "individual dots, or 'bars', 'lines' or 'grids' of sintered

[3] The analysis of this argument assumes, without deciding, the combination of Lassiter and Hefele.

agglomerated powders will not complete a contiguous or homogeneous shape of polymer to completely cover the underside area of a nail head, much less the larger coverage area required for a functioning nail reinforcement." *Id.* at 31 (citing Ex. 2003 ¶ 78; Ex. 2004 ¶¶ 78–82). According to Patent Owner, Hefele's "sintered powder, in whatever shape is fatal to providing nail pullout or pull-through benefits because a failure will occur at each powder particle's boundary" and "cannot be modified [because] it would defeat Hefele's espoused objectives." *Id.* at 31–32.

We are not persuaded by Patent Owner's arguments. With respect to the "depositing tab material onto the surface of said roofing or building cover material at a plurality of nail tabs from a lamination roll" limitation of claim 1, Petitioner relies on Lassiter's description of depositing liquid polymer tab material onto the surface of a roofing or building cover material at a plurality of nail tabs, and on Hefele for its "use of a transfer or lamination roll 5 to deposit polymer tab material 7." Pet. 21–23. Like the '757 patent, Lassiter states that "it has been a common practice to either use roofing nails with large heads or to use an auxiliary large washer or tab that lies underneath the nail head" because "[s]uch large washer or tab successfully resists being torn through as with a smaller nail head of regular size." Ex. 1003, 1:66–2:3. The Lassiter nail tabs are intended to serve the same purpose as roofing nails with large heads or auxiliary large washers or tabs in reinforcing the nail against pullout and tear through. Thus, we are persuaded by Petitioner's argument that the combination of Lassiter and Hefele discloses "nail tabs" as required by claim 1 and consistent with our construction of the term.

Second, Patent Owner argues that "Hefele expressly does not pressure bond or pressure adhere its powder agglomerate" because "Figure 3 of Hefele shows its agglomerated powder material is not pressure bonded or pressure adhered as there is only the slightest of contact to heat adhere the agglomerates." PO Resp. 35. Dr. Bohan explains that

> Hefele refers only to a "slight pressure" [Ex. 1004, Col. 3:55–60] which is used to help dislodge the powdered agglomerates from anti-adhesive coated heater roll 5 and transfer the agglomerates 7 to the high temperature web 8. Hefele expressly teaches away from using a significant force, such as that used in the Collins '757 patent stating that "[t]oo great a flattening can be prevented by appropriate choice of a low application pressure of the roller." [Ex. 1004, Col. 2:45–46].
>
> Hefele Figure 3 shows a magnified schematic of powdered coating 10. This figure shows the powdered coating sitting entirely on the surface of the web 8 and is not pressed into the substrate at all. This figure is consistent with the thermal bonding mechanism taught by Hefele and the teaching against the use of pressure due to over flattening of the grid. The slight flattening pressure disclosed by Hefele is entirely distinct from the bonding or adhering pressure taught in the Collins '757 patent Claims 1 and 7 respectively.

Ex. 2004 ¶¶ 84–85 (brackets in original). Petitioner responds that "Patent Owner concedes that pressure (*i.e.*, 'slight pressure') is used to bond and adhere the polymer tabs to the substrate" in Hefele, and that Hefele cannot "be distinguished on the basis of 'light, conventional, or heavy' pressure" because such "limitations are not recited in the claims." Reply 20 (citing PO Resp. 35–36).

Based on our review of the record, we find Petitioner's argument that Hefele discloses bonding tab material to a substrate surface "by pressure between [the lamination roll] and said surface" as is required by claim 1 to

be persuasive. Pet. 23–24; Reply 20. The '757 patent describes applying "sufficient pressure so that the roofing material or the transfer material picks up the tab material left in the depressions . . . to form tabs or continuous strips." Ex. 1001, 6:36-42. Hefele discloses a comparable process. In Hefele, heater roller 5 "is pressed relatively strongly onto the gravure roller" to transfer the powder material from the gravure roller to the surface of heater roller 5, after which sufficient pressure is applied between heated roller 5 and pressure roller 9 to form a "grid-like coating" on material 8 that can be "punctiform [points or dots], in bar form or in linear form." Ex. 1004, 3:33–62. Patent Owner's argument that Hefele's application of "slight pressure" is not pressure bonding or adhering is unpersuasive.

Third, Patent Owner argues that it would not have been obvious to one of ordinary skill in the art to combine the teachings of "Lassiter which uses asphalt coated substrates with Hefele's non-asphalt substrate teachings." PO Resp. 29. Patent Owner argues that Hefele "relates to a sizing process for a thin textile" and "nowhere teaches or suggests that it is somehow applicable to a 'roofing or building cover material' such as heavily asphalt coated substrates which expressly are not 'leather, foils, papers, and foam materials' or the 'hairy or open mesh construction' substrates contemplated by Hefele." PO Resp. 29. According to Patent Owner, "[s]uch substrates, particularly those of 'hairy or open mesh constructions,' would be susceptible to water intrusion and, of course, cannot be roofing or building cover materials." *Id.* at 29–30 (citing Ex. 2003 ¶ 93; Ex. 2004 ¶ 36).

Petitioner responds that "none of the claims of the '757 patent recite any type of saturated or coated substrate," and "[t]his was confirmed by both

of Patent Owner's experts, who admitted that none of these limitations are recited in the asserted claims." Reply 4 (citing Ex. 1021, 71:13–72:12; Ex. 1022, 16:21–17:11). Petitioner further responds that Lassiter "discloses forming nail tabs on unsaturated substrates, such as 'styrofoam board sheathing' for wrapping the sides of a house" and that "such substrates need only be run through nail production area 18, thereby eliminating the need for an asphalt treatment area and any alleged contamination." *Id.* at 9.

Although we agree with Petitioner that claim 1 does not require an asphalt-coated substrate, we construed "roofing or building cover material" to mean "base substrate materials such as dry felt, fiberglass mat, and/or polyester mat, before coating or saturation with asphalt or asphalt mix, and asphalt coated or saturated substrates such as tar paper and saturated felt." *See supra*, Section II.A.2. Based on our review of the complete record, we agree with Patent Owner that Petitioner does not provide sufficient explanation as to why a person having ordinary skill in the art would have looked to Hefele, directed to manufacturing "[c]oated interlining materials on the basis of weaves, textiles, woven textile goods, fleeces, knitted fleeces, and woven knitted fleeces," and "coated synthetic leather, foils, papers, and foam materials" (Ex. 1004, 2:62–3:3), for guidance in improving Lassiter's spray-on nail tab application process in order to print nail tabs on "a wider range of substrates." *See* Pet. 24–25 (stating that a person having ordinary skill in the art would have been aware that an advantage of Hefele's offset gravure printing method is that "a wide variety of surface structures can be printed on or coated," and combining Hefele with Lassiter "would allow Lassiter to print nail tabs on a wider range of substrates in a predictable manner"). Moreover, Dr. Levenson testified that, "[i]n reading the

background of the invention and the summary of the invention [of Lassiter], unless I'm missing something, I don't see reference to what would be specific problems in the process" and that the Lassiter "spraying method is an alternative method for depositing an image on a substrate." Ex. 2005, 67:16–25. Petitioner does not direct us to, nor do we discern, any statements in Lassiter with respect to limitations on the types of substrates to which nail tabs can be applied using the Lassiter spray-on process.

We also find persuasive Patent Owner's argument that a person having ordinary skill in the art would have understood that Lassiter's description of the problems of using rollers to apply nail tabs to an asphalt saturated substrate "applies to virtually any commercially viable process of making asphalt coated roofing cover materials." PO Resp. 49. We are persuaded by Mr. Todd's testimony that Lassiter would discourage a person having ordinary skill in the art of manufacturing roofing and building cover materials from using a method of nail tab application that applies pressure from rollers while the tab material is hot in order "to prevent the tabs from being damaged by the contact or pressure of a roller which could interrupt the bonding process of the tab material to the asphalt saturated substrate as the tab cools." Ex. 2003 ¶ 59; *see also id.* ¶ 61 ("Lassiter also discourages the use of solid, un-grooved, rollers to convey the finished sheet, with tabs installed, to avoid certain damage due to the roller interrupting the bonding process of the tab material to the sheet as they cool."); Ex. 1003, 2:35–40 ("The high temperature of [the prior art process] and the rollers used tend to either melt the adhesive glue, melt the tab material itself, scrape off the tabs, or a combination of all three, any of which renders the resulting saturated felt material unreliable, if not unsuited, for commercial use."). Thus,

Lassiter's discouragement of the use of high temperatures and roller pressure, together with Patent Owner's expert's supporting statements, persuades us that one of ordinary skill in the art would not have looked to Hefele's heated roller printing system, but rather would have tried to avoid high temperatures and pressure to secure nail tabs.

Petitioner relies on the Levenson Declaration to support its contention that combining Lassiter and Hefele "is a simple substitution of one well-known polymer deposition technique for another to obtain predictable results." Pet. 26. Dr. Levenson testifies that "both Lassiter and Hefele are directed to applying polymer tab material to a substrate such as paper," but does not account for differences between the paper used in Hefele and the roofing paper, felt roofing paper, and tar paper described in Lassiter, or explain why the roofing paper, felt roofing paper, and tar paper described in Lassiter would have caused a person having ordinary skill in the art to look to Hefele for guidance with respect to the application of nail tabs. Ex. 1014 ¶ 43. Mr. Todd, on the other hand, convincingly states that Hefele does not "address utilizing anything even remotely resembling a heavily asphalt saturated substrate," and "[w]ithout this link there does not seem to be any reason someone manufacturing a roofing product would ever look to a common printing or coating process." Ex. 2003 ¶ 63.

Petitioner's contentions that "[d]epositing polymer tab material using a transfer or lamination roll as disclosed by Hefele is old and well-known (*i.e.*, gravure and 'offset') and, hence, well understood to provide predictable results" and "[t]he combination further uses a known technique to improve a similar method and would be obvious to try" similarly are insufficient. Pet. 26. The Federal Circuit has held that "a finite number of identified,

predictable solutions" may support an inference of obviousness, but to the extent an art is unpredictable, "*KSR*'s focus on these 'identified, predictable solutions' may present a difficult hurdle because potential solutions are less likely to be genuinely predictable." *Eisai Co. Ltd. v. Dr. Reddy's Labs., Ltd.*, 533 F.3d 1353, 1359 (Fed. Cir. 2008) (citing *KSR*, 550 U.S. at 421 ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.")). As set forth above, we credit Mr. Todd's testimony that a person having ordinary skill in the art of manufacturing roofing or building cover materials would have recognized the problems associated with using a roller system to apply the nail tabs, as described in Lassiter. We also find that, although Dr. Levenson opines that "[d]epositing polymer tab material with a transfer or lamination roll as disclosed by Hefele is one of a finite number of known ways to successfully and reliably print polymer," he does not provide any objective support for his opinion that using Hefele to improve Lassiter "would be obvious to try with a reasonable expectation of success." Ex. 1014 ¶ 44; *see, e.g.*, *InTouch Techs., Inc. v. VGO Commc'ns, Inc.*, 751 F.3d 1327, 1348–49 (Fed. Cir. 2014) (holding expert testimony to be impermissible hindsight for failing to explain what reason or motivation one of ordinary skill in the art at the time of the invention would have had to place the prior art together). Because Dr. Levenson lacks expertise in the field of manufacturing roofing and building cover material, this testimony is unpersuasive.

Dr. Levenson opines that all of the elements of the claims existed in the prior art, but fails to provide sufficient reason why one of ordinary skill

in the art at the time of filing would have combined the different elements in Lassiter and Hefele to achieve the claimed invention. That each element of claim 1 of the '757 patent was known in the prior art is insufficient to establish that the subject matter of claim 1 would have been obvious based on the combination of Lassiter and Hefele. *See Cheese Sys. Inc. v. Tetra Pak Cheese and Powder Sys., Inc.*, 725 F.3d 1341, 1352 (Fed. Cir. 2013) ("Obviousness cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention." (internal quotation marks omitted)). As explained in *KSR*, "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR*, 550 U.S. at 418. Consequently, Petitioner has not shown sufficiently that a person having ordinary skill in the art would attempt to improve Lassiter by looking to Hefele.

On the record before us, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that claim 1 would have been obvious over the combination of Lassiter and Hefele. Claims 2, 4, 6, and 7 contain the same or substantially the same limitations discussed above with respect to claim 1. We have considered Petitioner's and Patent Owner's arguments for these claims, but because none of Petitioner's arguments for unpatentability of these claims overcomes the shortcomings in its case for unpatentability of claim 1 with respect to whether a person having ordinary skill in the art would have attempted to improve Lassiter by looking to Hefele, we are unpersuaded. Thus, for the same reasons given above, we also conclude that Petitioner has not demonstrated by a

preponderance of the evidence that claims 2, 4, 6, and 7 would have been obvious over the combination of Lassiter and Hefele.

D. Obviousness over Lassiter and Bayer

Petitioner asserts that claims 1, 2, 4, and 6 would have been obvious under 35 U.S.C. § 103(a) over the combination of Lassiter and Bayer, and relies on the Levenson Declaration in support of its assertions. Pet. 40–46, 49–50; Reply 7–20. Petitioner explains how a combination of Lassiter and Bayer allegedly discloses or suggests the claimed subject matter, and relies on the Levenson Declaration. *Id.* Patent Owner disagrees with Petitioner's assertions, and relies on the Todd Declaration and the Bohan Declaration. PO Resp. 37–44, 48–59.

1. Overview of Bayer

Bayer is directed to a method and apparatus for applying coating material to a receiving surface. Ex. 1007, 1:10–11. According to Bayer, "[t]he coating material may be any suitable material, including but not limited to adhesive (e.g. pressure sensitive adhesive) and ink." *Id.* at 4:18–20. Bayer states that "[t]he receiving surface may be, for example, a substrate, such [as] a continuous web of paper or polymeric material, or a belt or roller that receives the material and transfers the material to a substrate." *Id.* at 4:20–23.

Figure 6 of Bayer is reproduced below:

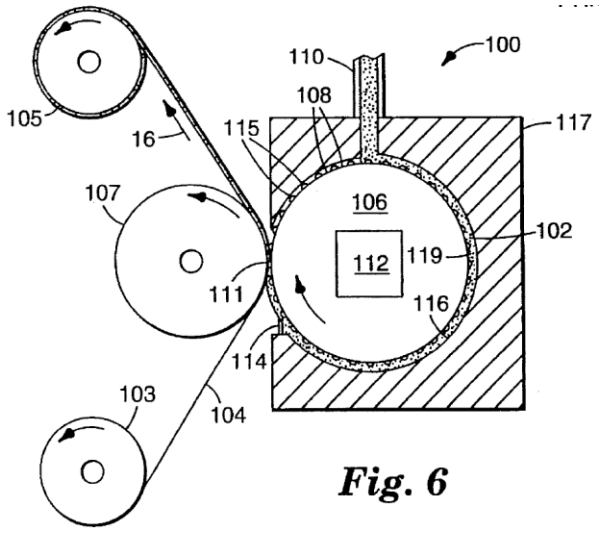

Fig. 6

Figure 6 is a cross-sectional view of the coating apparatus described in Bayer. *Id.* at 3:63–64. Applicator apparatus 100 applies adhesive 102 to substrate 104, which is provided by supply roll 103 and collected at collection roll 105. *Id.* at 4:28–32. Adhesive source 110 provides adhesive 102 to peripheral surface 108 of hub 106. *Id.* at 4:39–45. Substrate 104 is fed between backing roller 107 and hub 106, such that adhesive 102 is applied to substrate 104 at application interface 111. *Id.* at 4:36–38.

Bayer states that peripheral surface 108 "includes a plurality of spaced, discrete structures projecting from the peripheral surface of the hub, between and on which structures the adhesive is carried." *Id.* at 4:55–60. These structures are identified as projecting structures 115 in Figure 6 above. According to Bayer, "[p]rojecting structures 115 may be regularly spaced or irregularly spaced about the peripheral surface, and may be hemispherical, square, triangular, or any other suitable shape." *Id.* at 4:66–5:2.

2. Analysis

Petitioner contends that the combination of Lassiter and Bayer discloses all the elements of claim 1. Pet. 35–39. Petitioner contends that Bayer discloses depositing tab material from a roller onto a substrate surface at a plurality of positions. *Id.* at 36. Petitioner further contends that Bayer discloses that the tab material bonds to the substrate surface by contact pressure between the roller and the substrate surface. *Id.* at 37. Petitioner contends that Lassiter and Bayer "are both directed to printing polymers on various substrates including on roofing or building cover materials (*i.e.*, both references print on 'paper,' which Lassiter notes is a roofing or building cover material)." *Id.* at 35. According to Petitioner, a person having ordinary skill in the art "would have readily recognize[d] the wide ranging benefits and predictable results of printing polymer nail tabs provided by such a combination," and that the combination is "a simple substitution of one well known process for another, and yield[s] predictable results." *Id.*

Patent Owner makes two main arguments with respect to the elements of claim 1. First, Patent Owner argues that the combination of Lassiter and Bayer cannot make a nail tab as required by claim 1.[4] PO Resp. 54. Patent Owner argues that "[a]n ordinarily skilled artisan would understand that if, as stated in Bayer, pressure sensitive coating material 'is carried only on the outermost surface of each island portion 52' then the thickness of the material applied could not be sufficient to be a nail tab as it would not provide any measurable amount of reinforcement." *Id.* at 40–41 (citing Ex. 2003 ¶¶ 109–110). Patent Owner argues that the Bayer examples "show

[4] The analysis of this argument assumes, without deciding, the combination of Lassiter and Bayer.

that, even when a different device from Petitioner's asserted Figure 4 (Prior Art) was employed in Bayer, it was only able to obtain 'an adhesive coating thickness of 0.00127 mm to 0.00381 mm (0.00005 in to 0.0015 in).'" *Id.* at 41. Citing the Todd and Bohan Declarations as support, Patent Owner argues that "[t]his thickness of adhesive is not, and cannot be, adequate to make a nail tab." *Id.* at 42 (citing Ex. 2003 ¶¶ 109–110; Ex. 2004 ¶¶ 94–96).

We are not persuaded by Patent Owner's arguments. With respect to the "depositing tab material onto the surface of said roofing or building cover material at a plurality of nail tabs from a lamination roll" limitation of claim 1, Petitioner states that "Lassiter discloses depositing tab material as in this element but from a nozzle and not a lamination roll. Bayer discloses use of a lamination roll in this context." Pet. 36. Like the '757 patent, Lassiter states that "it has been a common practice to either use roofing nails with large heads or to use an auxiliary large washer or tab that lies underneath the nail head" because "[s]uch large washer or tab successfully resists being torn through as with a smaller nail head of regular size." Ex. 1003, 1:66–2:3. The Lassiter nail tabs are intended to serve the same purpose as roofing nails with large heads or auxiliary large washers or tabs in reinforcing the nail against pullout and tear through. Thus, we are persuaded by Petitioner's argument that the combination of Lassiter and Bayer discloses "nail tabs" as required by claim 1.

Second, Patent Owner argues that "Figure 4 of Bayer used by Petitioner only employs the lightest of contact, if any, at the interface between paper substrate 58 and coating material 56. This is because Bayer's processes are not designed to transfer coat material due to pressure, nor is such pressure necessary." PO Resp. 43. Citing the Todd Declaration, Patent

Owner argues that "[t]his is in stark contrast to and does not include 'bonding by pressure' as required by independent Claim 1." *Id.* at 43–44 (citing Ex. 2003 ¶¶ 110–112). According to Mr. Todd, "the Bayer device merely dispenses adhesive onto the surface of a substrate with no use of bonding or adhering pressure onto the substrate." Ex. 2003 ¶ 112. Petitioner responds that Patent Owner "concedes 'contact' is required to bond the polymer nail tabs to the substrates and does not dispute that contact requires pressure" and that Bayer cannot "be distinguished on the basis of 'light, conventional, or heavy' pressure" because such "limitations are not recited in the claims." Reply 20 (citing PO Resp. 43–44).

Based on our review of the record, we find Patent Owner's argument that Bayer does not disclose bonding tab material to a substrate surface "by pressure between [the lamination roll] and said surface" as is required by claim 1 to be persuasive. Petitioner contends that Bayer Figure 4 "discloses the tab material 56 bonds to the surface of the substrate 58 by contact pressure between the lamination roll 55 and the surface of the substrate." Pet. 37. Petitioner also contends that "Bayer discloses lamination roll 55 applies pressure by having its peripheral surface contacting a receiving surface of the substrate 58." *Id.* As an initial matter, we note that Bayer Figure 4 is an illustration of a planographic coating process according to the prior art, which "is similar to gravure coating in some regards," but "planographic coating uses a pattern roller 50 having a multitude of island portions 52 that are raised above peripheral surface 54, as shown in FIGS. 4 and 5," whereas "gravure coating uses an application roller having a plurality of cells that are recessed from the peripheral surface of the application roller." Ex. 1007, 2:15–26. Dr. Levenson states that

"[l]amination roll 55 contacting surface of substrate 58 generates pressure to bond the tab material to the surface of substrate 58," (Ex. 1014 ¶ 68), but Bayer does not describe the contact between roller 55 and the substrate 58 as the application of pressure. Bayer simply states that "pattern roller 50 *contacts* the application roller 55 *to transfer* the coating material thereto" and "[t]he application roller then transfers coating material 56 onto a substrate 58 in the desired pattern." Ex. 1007, 2:28–31 (emphasis added). Bayer also states that the coating material may be "adhesive (e.g. pressure sensitive adhesive) and ink." *Id.* at 4:18–20. Because Dr. Levenson does not provide any further explanation or objective evidence to demonstrate that the contact between roller 55 and substrate 58 as described in Bayer would pressure bond the adhesive or ink coating to the substrate, we do not find his testimony to be persuasive in this regard. *See* 37 C.F.R. § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight."); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) (stating that a lack of objective support for an expert opinion "may render the testimony of little probative value in [a patentability] determination.").

Even if the contact between Bayer's roller 55 and the substrate 58 pressure bonds the coating to the substrate as required by claim 1, we are not persuaded that Petitioner has shown sufficiently that a person having ordinary skill in the art would have attempted to improve Lassiter by looking to Bayer. Specifically, Petitioner does not provide sufficient explanation as to why a person having ordinary skill in the art would have looked to Bayer, which relates to applying a coating material such as adhesive or ink onto a substrate such as paper or polymeric material (Ex. 1007, 4:16–23), for

guidance in improving Lassiter's spray-on nail tab application process. Moreover, we are persuaded by Dr. Levenson's testimony that, "[i]n reading the background of the invention and the summary of the invention [of Lassiter], unless I'm missing something, I don't see reference to what would be specific problems in the process" and that the Lassiter "spraying method is an alternative method for depositing an image on a substrate." Ex. 2005, 67:16–25. Petitioner does not direct us to, nor do we discern, any statements in Lassiter that would have motivated a person having ordinary skill in the art to have attempted to improve Lassiter's disclosed process.

We also find persuasive Patent Owner's argument that a person having ordinary skill in the art would have understood that Lassiter's description of the problems of using rollers to apply nail tabs to an asphalt saturated substrate "applies to virtually any commercially viable process of making asphalt coated roofing cover materials." PO Resp. 49. We find persuasive Mr. Todd's testimony that Lassiter would discourage a person having ordinary skill in the art of manufacturing roofing or building cover materials from using a method of nail tab application that applies pressure from rollers while the tab material is hot in order "to prevent the tabs from being damaged by the contact or pressure of a roller which could interrupt the bonding process of the tab material to the asphalt saturated substrate as the tab cools." Ex. 2003 ¶ 59; *see also id.* ¶ 61 ("Lassiter also discourages the use of solid, un-grooved, rollers to convey the finished sheet, with tabs installed, to avoid certain damage due to the roller interrupting the bonding process of the tab material to the sheet as they cool."); Ex. 1003, 2:35–40 ("The high temperature of [the prior art process] and the rollers used tend to either melt the adhesive glue, melt the tab material itself, scrape off the tabs,

or a combination of all three, any of which renders the resulting saturated felt material unreliable, if not unsuited, for commercial use."). Thus, Lassiter's discouragement of the use of roller pressure in a high temperature environment, together with Patent Owner's expert's supporting statements, persuades us that one of ordinary skill in the art would not have looked to Bayer's roller system, but rather would have tried to avoid using roller pressure to secure nail tabs.

Petitioner relies on the Levenson Declaration to support its contention that combining Lassiter and Bayer "is a simple substitution of one well-known polymer deposition technique for another to obtain predictable results." Pet. 39. Dr. Levenson testifies that "both Lassiter and Bayer are directed to applying polymer tab material to a substrate such as paper," but does not account for differences between the paper used in Bayer and the roofing paper, felt roofing paper, and tar paper described in Lassiter, or explain why the roofing paper, felt roofing paper, and tar paper described in Lassiter would cause a person having ordinary skill in the art to look to Bayer for guidance with respect to the application of nail tabs. Ex. 1014 ¶ 72. Mr. Todd, on the other hand, states that Bayer does not "address utilizing anything even remotely resembling a heavily asphalt saturated substrate," and "[w]ithout this link there does not seem to be any reason someone manufacturing a roofing product would ever look to a common printing or coating process." Ex. 2003 ¶ 63.

Petitioner's contentions that "[d]epositing polymer tab material using a transfer or lamination roll as disclosed by Bayer is old and well-known (*i.e.*, 'offset' printing) and, hence, well understood to provide predictable results" and "[t]he combination further uses a known technique to improve a

similar method and would be obvious to try" similarly are insufficient. Pet. 39. The Federal Circuit has held that "a finite number of identified, predictable solutions" may support an inference of obviousness, but to the extent an art is unpredictable, "*KSR*'s focus on these 'identified, predictable solutions' may present a difficult hurdle because potential solutions are less likely to be genuinely predictable." *Eisai Co.*, 533 F.3d at 1359 (citing *KSR*, 550 U.S. at 421 ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.")). As set forth above, we credit Mr. Todd's testimony that a person having ordinary skill in the art of manufacturing roofing or building cover materials would have recognized the problems associated with using a roller system to apply the nail tabs, as described in Lassiter. We also find that, although Dr. Levenson opines that "[d]epositing polymer tab material with a transfer or lamination roll as disclosed by Bayer is one of a finite number of known ways to successfully and reliably print polymer," he does not provide any objective support for his opinion that using Bayer to improve Lassiter "would be obvious to try with a reasonable expectation of success." Ex. 1014 ¶ 72; *see, e.g.*, *InTouch Techs.*, 751 F.3d at 1348–49. Because Dr. Levenson lacks expertise in the field of manufacturing roofing and building cover material, this testimony is unpersuasive.

Dr. Levenson opines that all of the elements of the claims existed in the prior art, but fails to provide sufficient reason why one of ordinary skill in the art at the time of filing would have combined the different elements in Lassiter and Bayer to achieve the claimed invention. That each element of

claim 1 of the '757 patent was known in the prior art is insufficient to establish that the subject matter of claim 1 would have been obvious based on the combination of Lassiter and Bayer. *See Cheese Sys. Inc.*, 725 F.3d at 1352. As explained in *KSR*, "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR*, 550 U.S. at 418. Consequently, Petitioner has not shown sufficiently that a person having ordinary skill in the art would attempt to improve Lassiter by looking to Bayer.

On the record before us, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that claim 1 would have been obvious over the combination of Lassiter and Bayer. Claims 2, 4, and 6 depend from claim 1 and contain the same limitations discussed above with respect to claim 1. We have considered Petitioner's and Patent Owner's arguments for these claims, but because none of Petitioner's arguments for unpatentability of these claims overcomes the shortcomings in its case for unpatentability of claim 1, we are unpersuaded. Thus, for the same reasons given above, we also conclude that Petitioner has not demonstrated by a preponderance of the evidence that claims 2, 4, and 6 would have been obvious over the combination of Lassiter and Bayer.

E. Obviousness over Lassiter and Eaton

Petitioner asserts that claims 1, 2, 4, 6, and 7 would have been obvious under 35 U.S.C. § 103(a) over the combination of Lassiter and Eaton. Pet. 47–60; Reply 7–11, 13–22. Petitioner explains how a combination of Lassiter and Eaton allegedly discloses or suggests the claimed subject matter, and relies on the Levenson Declaration. *Id.* Patent

Owner disagrees with Petitioner's assertions, and relies on the Todd Declaration and the Bohan Declaration. PO Resp. 44–59.

1. Overview of Eaton

Eaton is directed to composite webs that include reinforcing discrete polymeric regions and elastic discrete polymer regions. Ex. 1005, 1:7–9. Eaton states that the substrate of the composite web "may be a woven material, nonwoven material, knit material, paper, film, or any other continuous media that can be fed through a nip point," and "may have a wide variety of properties, such as extensibility, elasticity, flexibility, conformability, breathability, porosity, stiffness, etc." *Id.* at 6:28–35. Eaton also states that the discrete polymeric regions "may be formed of a wide variety of different nonelastomeric thermoplastic polymeric materials," and defines "thermoplastic" to mean "a polymer or polymeric composition that softens when exposed to heat and returns to its original condition or near its original composition when cooled to room temperature." *Id.* at 8:54–60.

Figure 11 of Eaton is reproduced below:

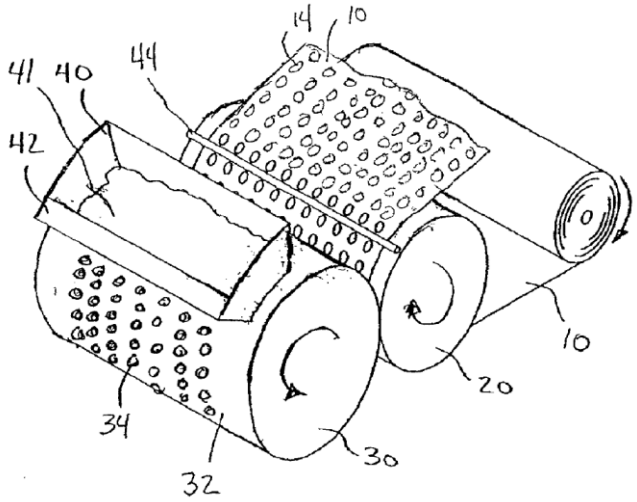

FIG. 11

Figure 11 is a perspective view of a polymer transfer process described in Eaton. *Id.* at 4:39–42. Substrate 10 is directed into a transfer nip formed between backup roll 20 and transfer roll 30. *Id.* at 14:29–31. Exterior surface 32 of transfer roll 30 includes one or more depressions 34. *Id.* at 14:32–36. Molten thermoplastic composition 41 is supplied to exterior surface 32 from trough 40, and depressions 34 are thus filled with molten thermoplastic composition 41. *Id.* at 14:36–40, 48–52. Transfer roll 30 rotates until molten thermoplastic composition 41 in depressions 34 are contacted with substrate 10 against backup roll 20, and molten thermoplastic composition 41 is transferred from depressions 34 to substrate 10. *Id.* at 15:23–31.

Figure 25 of Eaton is reproduced below:

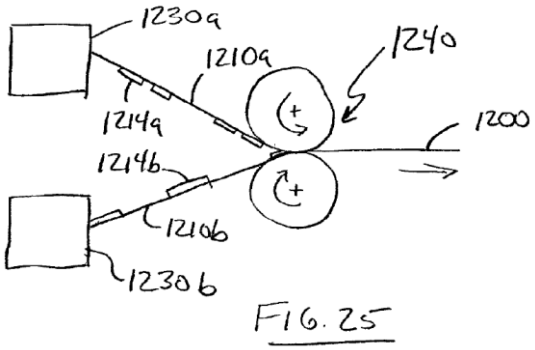

FIG. 25

Figure 25 is a schematic diagram of a system of laminating two substrates together, with each substrate including one or the other of the elastomeric or nonelastomeric discrete polymeric regions as described in Eaton. *Id.* at 22:43–47. Transfer station 1230a produces nonelastomeric discrete polymeric regions 1214a on substrate 1210a, and transfer station 1230b produces elastomeric discrete polymeric regions 1214b on substrate 1210b; each of transfer stations 1230a and 1230b may be constructed similarly to the system depicted in Figure 11 above. *Id.* at 22:47–54. Substrates 1210a

and 1210b are directed into laminating station 1240, producing laminated composite web 1200, which provides both nonelastomeric discrete polymeric regions 1214a and elastomeric discrete polymeric regions 1214b within the surrounding layers of substrates 1210a and 1210b. *Id.* at 22:53–59.

2. Analysis

Petitioner contends that the combination of Lassiter and Eaton discloses all of the limitations of independent claim 1. Pet. 52–58. Petitioner contends that Eaton discloses using a lamination roll to deposit tab material on a substrate, as shown in Figure 25. *Id.* at 53–54. Petitioner also contends that Eaton discloses bonding tab material to a substrate using pressure between a lamination roll and the surface of the substrate, also relying on Figure 25. *Id.* at 54–55. Petitioner further contends that it would have been obvious to modify Lassiter's nozzle-based method to include the lamination roll method described in Eaton because "[b]oth print polymer tabs on a recognized roofing or building cover material such as 'paper.'" *Id.* at 55–56. As it did with respect to the combination of Lassiter and Hefele, and the combination of Lassiter and Bayer, Petitioner also contends that the modification "is a simple substitution of one well-known polymer deposition technique for another to obtain predictable results." *Id.* at 57–58.

Patent Owner makes two main arguments with respect to claim 1. First, Patent Owner argues that the combination of Lassiter and Eaton cannot make a nail tab as required by claim 1. PO Resp. 54. Patent Owner argues that Eaton Figure 25 "does not place polymer on any exterior surface, but rather, within two layers making a composite." *Id.* at 46. Patent Owner

further argues that the volume of material being transferred in Eaton is "simply not sufficient to form a nail tab." *Id.* at 47.

We are not persuaded by Patent Owner's first argument.[5] With respect to the "depositing tab material onto the surface of said roofing or building cover material at a plurality of nail tabs from a lamination roll" limitation of claim 1, Petitioner states that "Lassiter discloses depositing tab material as in this element but from a nozzle. Nevertheless, Eaton discloses use of a lamination roll for depositing tab material as claimed." Pet. 53. Like the '757 patent, Lassiter states that "it has been a common practice to either use roofing nails with large heads or to use an auxiliary large washer or tab that lies underneath the nail head" because "[s]uch large washer or tab successfully resists being torn through as with a smaller nail head of regular size." Ex. 1003, 1:66–2:3. The Lassiter nail tabs are intended to serve the same purpose as roofing nails with large heads or auxiliary large washers or tabs in reinforcing the nail against pullout and tear through. Thus, we are persuaded by Petitioner's argument that the combination of Lassiter and Eaton discloses "nail tabs" as required by claim 1.

Second, Patent Owner argues neither "Petitioner nor its expert **specifically** describe how Lassiter and Eaton could or would be combined" because Petitioner only states that the modification of Lassiter with Eaton is "a simple substitution of one well known process (i.e., nozzle printing) for another (i.e., roll-based printing)." PO Resp. 44 (citing Pet. 47–48). Patent Owner argues that "Eaton simply teaches adding elasticity to conventional paper substrates because 'elasticity may be useful in connection with

[5] The analysis of this argument assumes, without deciding, the combination of Lassiter and Eaton.

fastening systems for items such as garments'" and "expressly states to only employ substrates that 'do not melt, soften or otherwise disintegrate under the temperatures and pressures experienced during the [rolling] step of transferring the thermoplastic composition to the substrate." *Id.* at 45 (brackets in original) (citing Ex. 1005, 1:39–42, 8:15–18). According to Patent Owner, a person having ordinary skill in the art would have been led away "from employing Eaton's teachings with, for example, Lassiter's asphalt saturated substrates because asphalt is hot, soft, and/or tacky and is precisely a substrate that Eaton advises against using." *Id.* at 45–46.

Petitioner responds that "none of the claims of the '757 patent recite any type of saturated or coated substrate," and "[t]his was confirmed by both of Patent Owner's experts, who admitted that none of these limitations are recited in the asserted claims." Reply 4 (citing Ex. 1021, 71:13–72:12; Ex. 1022, 16:21–17:11). Petitioner further responds that Lassiter "discloses forming nail tabs on unsaturated substrates, such as 'styrofoam board sheathing' for wrapping the sides of a house" and that "such substrates need only be run through nail production area 18, thereby eliminating the need for an asphalt treatment area and any alleged contamination." *Id.* at 9.

Although we agree with Petitioner that claim 1 does not require an asphalt-coated substrate, as set forth above we construed "roofing or building cover material" to mean "base substrate materials such as dry felt, fiberglass mat, and/or polyester mat, before coating or saturation with asphalt or asphalt mix, and asphalt coated or saturated substrates such as tar paper and saturated felt." *See supra*, Section II.A.2. Based on our review of the complete record, we agree with Patent Owner that Petitioner does not provide sufficient explanation as to why a person having ordinary skill in the

art would have looked to Eaton, which is directed to methods and systems of producing composite webs that include a substrate with reinforcing discrete polymeric regions located on the surface or within the composite web (Ex. 1005, 5:31–34), for guidance in improving the spray-on nail tab application process described in Lassiter. Moreover, we are persuaded by Dr. Levenson's testimony testified that, "[i]n reading the background of the invention and the summary of the invention [of Lassiter], unless I'm missing something, I don't see reference to what would be specific problems in the process" and that the Lassiter "spraying method is an alternative method for depositing an image on a substrate." Ex. 2005, 67:16–25. Petitioner does not direct us to, nor do we discern, any statements in Lassiter that would have motivated a person having ordinary skill in the art to improve Lassiter's disclosed process.

We also find Patent Owner's argument that a person having ordinary skill in the art would understand that Lassiter's description of the problems of using rollers to apply nail tabs to an asphalt saturated substrate "applies to virtually any commercially viable process of making asphalt coated roofing cover materials" to be persuasive. PO Resp. 49. Mr. Todd convincingly testified that Lassiter would have discouraged a person having ordinary skill in the art of manufacturing roofing or building cover materials from using a method of nail tab application that applies pressure from rollers while the tab material is hot in order "to prevent the tabs from being damaged by the contact or pressure of a roller which could interrupt the bonding process of the tab material to the asphalt saturated substrate as the tab cools." Ex. 2003 ¶ 59; *see also id.* ¶ 61 ("Lassiter also discourages the use of solid, un-grooved, rollers to convey the finished sheet, with tabs installed, to avoid

certain damage due to the roller interrupting the bonding process of the tab material to the sheet as they cool."); Ex. 1003, 2:35–40 ("The high temperature of [the prior art process] and the rollers used tend to either melt the adhesive glue, melt the tab material itself, scrape off the tabs, or a combination of all three, any of which renders the resulting saturated felt material unreliable, if not unsuited, for commercial use."). Thus, Lassiter's discouragement of the use of high temperatures and roller pressure, together with Patent Owner's expert's supporting statements, persuades us that one of ordinary skill in the art would not have looked to Eaton's roller printing system, but rather would have tried to avoid using pressure to secure nail tabs in a high temperature environment.

Petitioner relies on the Levenson Declaration to support its contention that combining Lassiter and Eaton is "a simple substitution of one well-known process (*i.e.*, nozzle printing) for another (*i.e.*, roll-based printing), and yield predictable results." Pet. 47–48. Dr. Levenson testifies that "both Lassiter and Eaton are directed to applying polymer tab material to a substrate such as paper," but does not account for differences between the paper used in Eaton and the roofing paper, felt roofing paper, and tar paper described in Lassiter, or explain why the roofing paper, felt roofing paper, and tar paper described in Lassiter would have caused a person having ordinary skill in the art to look to Eaton for guidance with respect to the application of nail tabs. Ex. 1014 ¶ 94. Mr. Todd, on the other hand, persuasively states that Eaton does not "address utilizing anything even remotely resembling a heavily asphalt saturated substrate," and "[w]ithout this link there does not seem to be any reason someone manufacturing a

roofing product would ever look to a common printing or coating process." Ex. 2003 ¶ 63.

Petitioner's contentions that "the combination further uses a known technique to improve a similar method and would be obvious to try with a reasonable expectation of success" and "[i]t is also a combination of prior art elements according to known methods to obtain predictable results" similarly are insufficient. Pet. 52. The Federal Circuit has held that "a finite number of identified, predictable solutions" may support an inference of obviousness, but to the extent an art is unpredictable, "*KSR*'s focus on these 'identified, predictable solutions' may present a difficult hurdle because potential solutions are less likely to be genuinely predictable." *Eisai Co.*, 533 F.3d at 1359 (citing *KSR*, 550 U.S. at 421 ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.")). As set forth above, we credit Mr. Todd's testimony that a person having ordinary skill in the art of manufacturing roofing or building cover materials would have recognized the problems associated with using a roller to apply the nail tabs in Lassiter. We also note that, although Dr. Levenson opines that "[d]epositing polymer tab material with a transfer or lamination roll as disclosed by Eaton is one of a finite number of known ways to successfully and reliably deposit polymer," he does not provide any objective support for his opinion that using Eaton to improve Lassiter "would be obvious to try with a reasonable expectation of success." Ex. 1014 ¶ 94; *see, e.g., InTouch Techs., Inc.*, 751 F.3d at 1348–49. Because Dr. Levenson lacks expertise in

the field of manufacturing roofing and building cover material, this testimony is unpersuasive.

Dr. Levenson opines that all of the elements of the claims existed in the prior art, but fails to provide sufficient reason why one of ordinary skill in the art at the time of filing would have combined the different elements in Lassiter and Eaton. That each element of claim 1 of the '757 patent was known in the prior art is insufficient to establish that the subject matter of claim 1 would have been obvious based on the combination of Lassiter and Eaton. *See Cheese Sys. Inc.*, 725 F.3d at 1352. As explained in *KSR*, "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR*, 550 U.S. at 418. Consequently, Petitioner has not shown sufficiently that a person having ordinary skill in the art would attempt to improve Lassiter by looking to Eaton.

On the record before us, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that claim 1 would have been obvious over the combination of Lassiter and Eaton. Claims 2, 4, 6, and 7 contain the same or substantially the same limitations discussed above with respect to claim 1. We have considered Petitioner's and Patent Owner's arguments for these claims, but because none of Petitioner's arguments for unpatentability of these claims overcomes the shortcomings in its case for unpatentability of claim 1 with respect to whether a person having ordinary skill in the art would attempt to improve Lassiter by looking to Eaton, we are unpersuaded. Thus, for the same reasons given above, we also conclude that Petitioner has not demonstrated by a preponderance of the

evidence that claims 2, 4, 6, and 7 would have been obvious over the combination of Lassiter and Eaton.

III. CONCLUSION

For the reasons given, we are not persuaded that Petitioner has shown by a preponderance of the evidence that claims 1, 2, 4, 6, and 7 of the '757 patent would have been obvious over the combined teachings of Lassiter and Hefele or Lassiter and Eaton, or that claims 1, 2, 4, and 6 would have been obvious over the combined teachings of Lassiter and Bayer.

IV. ORDER

In consideration of the foregoing, it is

ORDERED that Petitioner has not shown by a preponderance of the evidence that claims 1, 2, 4, 6, and 7 of the '757 patent are unpatentable; and

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

PETITIONER:

Nenad Pejic
Mark McDougall
Jennifer Wick
CALFEE, HALTER & GRISWOLD, LLP
npejic@calfee.com
mmcdougall@calfee.com
jwick@calfee.com
ipupdate@calfee.com

PATENT OWNER:

James D. Petruzzi
THE PETRUZZI LAW FIRM
Jpetruzzi@MasonPetruzzi.com
ipr@masonpetruzzi.com

Jennifer Yancy
YANCY IP LAW, PLLC
jyancy@yancyip.com

Gregory Porter
James C. Willson
ANDREWS KURTH LLP
GregPorter@andrewskurth.com
JamesWillson@andrewskurth.com