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Paper 27
Entered: December 18, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GEOX S.p.A.,
Petitioner,

v.

OUTDRY TECHNOLOGIES CORPORATION,
Patent Owner.

Case IPR2014-01244
Patent 6,855,171 B2

Before MICHAEL P. TIERNEY, DONNA M. PRAISS, and JON B. TORNQUIST, *Administrative Patent Judges.*

PRAISS, *Administrative Patent Judge.*

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

I. INTRODUCTION

Geox S.p.A. ("Petitioner") filed a Petition (Paper 1 ("Pet.")) to institute an *inter partes* review of claims 1–15 of U.S. Patent No. 6,855,171 B2 ("the '171 patent," Ex. 1001). On December 19, 2014, the Board instituted trial to review patentability of the challenged claims. Paper 5 ("Dec. on Inst.").

Thereafter, Outdry Technologies Corporation ("Patent Owner") filed a Response (Paper 12 ("PO Resp.")), and Petitioner filed a Reply (Paper 15). Patent Owner also filed a motion to amend the challenged claims by replacing independent claims 1 and 9 with proposed amended claims 16 and 17, respectively (Paper 13 ("PO Mot.")), Petitioner filed an opposition to this motion (Paper 16 ("Pet. Opp.")), and Patent Owner filed a reply (Paper 17 ("PO Reply")). Petitioner requested oral argument and an oral hearing was held on September 8, 2015. A transcript of the oral argument is included in the record. Paper 26 ("Tr.").[1] Petitioner filed a motion to exclude certain evidence submitted by Patent Owner. Paper 18. Patent Owner filed an opposition (Paper 21) and Petitioner filed a reply to the opposition (Paper 22).

We have jurisdiction under 35 U.S.C. § 6(c), and we issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. We

[1] Petitioner filed objections to the demonstrative exhibits used by Patent Owner at the hearing. Paper 23. In reaching our decision on the merits, we have considered arguments and evidence that are presented in the demonstrative exhibits only where those arguments and evidence were presented previously and are supported by the record. We expunge all the demonstrative exhibits themselves from the record, because they constitute neither evidence nor, to the extent that they differ from the written briefing, argument allowable under our rules.

conclude Petitioner has established by a preponderance of the evidence that claims 1–15 of the ’171 patent are unpatentable. We also conclude that Patent Owner has failed to establish by a preponderance of the evidence that proposed amended claims 16 and 17 are patentable. In addition, we dismiss Petitioner’s motion to exclude evidence as moot.

A. Related Proceeding

Petitioner informs us that the ’171 patent was asserted in a complaint filed in the U.S. District Court for the Southern District of New York in *Outdry Technologies Corp. v. Geox S.p.A. et al.*, No. 1:13-cv-05542. Pet. 1. The complaint was withdrawn before the filing of an answer. *Id*.

B. The ’171 Patent (Ex. 1001)

The ’171 patent, titled “Process for Waterproofing Leather and Leather Obtained by Means of Said Process,” is directed to a process for waterproofing leather by adhering a semi-permeable membrane to the internal surface of the leather. Ex. 1001, 2:30–44. The membrane surface contacting the leather is “provided with a pattern of thermoadhesive glue, which is preferably formed of a plurality of dots of polyurethane glue, having a diameter included between 0.1 mm and 0.8 mm and a density included between 50 dots/cm^2 and 200 dots/cm^2.” *Id*. at 2:37–42. The other surface of the membrane may be firmly fastened to a support sheet, such as a fabric lining, or detachably fastened to a support sheet, such as a paper sheet. *Id*. at 2:60–66.

C. Illustrative Claims

Claims 1 and 9 are illustrative of the claims at issue. Claim 1 recites:

> 1. A process for waterproofing leather (1), comprising directly pressing on an internal surface of the leather (1) at least one semi-permeable membrane (2) whose surface contacting the leather (1) is provided with a discontinuous glue pattern to adhere the leather to the semi-permeable membrane wherein the glue pattern is formed of a multiplicity of dots having a density included between 50 dots/cm^2 and 200 dots/cm^2.

Claim 9 is the only other independent claim in the '171 patent and requires that the glue pattern "is formed of a multiplicity of dots having a diameter included between 0.1 mm and 0.8 mm" instead of having the density required by claim 1. All of the dependent claims depend directly or indirectly from claim 1.

D. Reviewed Grounds of Unpatentability

The Board instituted trial to review the patentability of the challenged claims on the following grounds:

Claim(s)	Basis	Reference(s)
1, 2, 5–11, 14, and 15	§ 103(a)	Thornton,[2] Scott,[3] and Hayton[4]
3	§ 103(a)	Thornton, Scott, Hayton, Driskill,[5] and Herlihy[6]
4	§ 103(a)	Thornton, Scott, Hayton, Loew,[7] Herlihy, and Nomi[8]

[2] Thornton et al., US 5,244,716, issued Sept. 14, 1993 ("Thornton," Ex. 1003).
[3] R. A. Scott, *Coated and Laminated Fabrics, in Chemistry of the Textiles Industry* 210 (C.M. Carr ed., 1995) ("Scott," Ex. 1008).
[4] Hayton et al., US 6,139,929, issued Oct. 31, 2000 ("Hayton," Ex. 1005).
[5] Driskill et al., US 4,925,732, issued May 15, 1990 ("Driskill," Ex. 1004).
[6] Herlihy et al., US 5,415,924, issued May 16, 1995 ("Herlihy," Ex. 1012).
[7] Loew et al., US 3,709,864, issued Jan. 9, 1973 ("Loew," Ex. 1011).

Claim(s)	Basis	Reference(s)
12	§ 103(a)	Thornton, Scott, Hayton, and Driskill
13	§ 103(a)	Thornton, Scott, Hayton, and Polegato[9]

II. ANALYSIS

A. Person Having Ordinary Skill in the Art (PHOSITA)

For purposes of this Decision, we do not discern an appreciable difference between Petitioner's and Patent Owner's proposed levels of ordinary skill in the art that would impact our ultimate conclusions. Petitioner contends that a person of ordinary skill in the art is evidenced by the references. Pet. 11. Patent Owner asserts that "[w]aterproofing leather is not a sophisticated technology, and the education level of a PHOSITA working in the industry is likely a four year degree." PO Resp. 30. According to Patent Owner, a PHOSITA likely would have knowledge related to making apparel from leather, waterproofing leather using sprays and liners, as well as knowledge of adhesives and bonding leather apparel, and also knowledge of waterproof breathable membranes of various types. *Id*. We consider the cited prior art as representative of the level of ordinary skill in the art, which Patent Owner essentially summarizes as the knowledge of a PHOSITA. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (finding the absence of specific findings on "level of skill in the art does not give rise to reversible error 'where the prior art itself reflects an appropriate level and a need for testimony is not shown'") (quoting *Litton*

[8] Nomi et al, US 4,692,369, issued Sept. 8, 1987 ("Nomi," Ex. 1013).
[9] Polegato et al., US 5,598,644, issued Feb. 4, 1997 ("Polegato," Ex. 1010).

Indus. Prods., Inc. v. Solid State Sys. Corp., 755 F.2d 158, 163 (Fed. Cir. 1985)).

B. Claim Interpretation

In an *inter partes* review, the Board interprets a claim term in an unexpired patent according to its broadest reasonable construction in light of the specification of the patent in which it appears. 37 C.F.R. § 42.100(b). Under that standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Only terms which are in controversy need to be construed, and then only to the extent necessary to resolve the controversy and material to the decision. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Support Sheet

Regarding the support sheet, Petitioner contends it should be interpreted to include either a temporary support that is removed, such as a release sheet, or one that becomes part of the final product, such as a liner. Pet. 11. Patent Owner contends that the term should be construed to be limited to "sheets" because "[n]o other material forms are disclosed other than 'sheets,' which include paper and fabric support sheets." PO Resp. 7 (citing Ex. 1001, 2:58–67). According to Patent Owner, the broadest reasonable construction, therefore, "includes any sheet of flexible fabric or fibrous material that is generally fastened to the membrane for structural support or as a lining in the finished product and the attachment is either detachable or firmly fastened to the semi-permeable membrane." *Id.* at 7–8.

In the Decision on Institution, we construed "support sheet" as "includ[ing] any material that is generally fastened to the membrane for structural support or as a lining in the finished product and the attachment is either detachable or firmly fastened to the semi-permeable membrane." Dec. on Inst. 6. This construction is based on the Specification, which describes multiple embodiments of the support sheet, including a detachable sheet and an internal liner. Ex. 1001, 2:58–67. The Specification also describes the use of "different materials" to make the support sheet. *Id*. at 2:63–64. Accordingly, we conclude that the broadest reasonable construction of "support sheet" is not limited to a sheet of fabric or fibrous material as Patent Owner contends, but, rather, explicitly includes "different materials" that can be fastened generally to the membrane for structural support or as a lining in the finished product and the attachment is either detachable or firmly fastened to the semi-permeable membrane. Therefore, consistent with the Specification, we construe "support sheet" to mean a sheet of any material that is generally fastened to the membrane for structural support or as a lining in the finished product and the attachment is either detachable or firmly fastened to the semi-permeable membrane.

Directly Pressing

Patent Owner contends that the term "directly pressing" recited in independent claims 1 and 9 should be construed to mean "contacting and covering by applying a perpendicular force." PO Resp. 10. Patent Owner argues that this construction is supported by the Specification because the term "directly" is used to "mean[] there is no other material in between the membrane and the leather, and the term further means that there is no water penetration between the leather and the membrane." Resp. 8–9 (citing Ex.

1001, 1:57–61 ("membrane [is] to be applied directly to the leather which has to be waterproofed, so as to avoid the use of a semipermeable lining and the water penetration between the leather and the lining.")). Patent Owner also argues that the term "pressing" is used to "mean[] applying force to the membrane and the leather because the goal of the process is to bond the two materials in a flat press or a roll press to prevent water penetration/accumulation between the leather and the membrane." *Id*. at 9 (citing Ex. 1001, 1:62–65, 2:30–36, 2:42–45). According to Patent Owner, a flat press and a roll press, which are mentioned in the Specification, "both apply a force that is perpendicular to the materials being pressed together." *Id*.

Petitioner responds that the Specification does not support the proposed construction of "contacting and covering" because the membrane can have a liner or support sheet between it and the pressing surface. Reply 2 (citing Ex. 1001, 2:58–68). Petitioner asserts that the Specification "uses the term 'directly' to describe applying a membrane to a leather without any intervening materials or layers other than the recited adhesive." *Id*. Petitioner also contends that the Specification does not limit pressing the membrane on the leather only by perpendicular force as the term "perpendicular force" is not contained in the Specification. *Id*. at 3.

At the oral hearing, Patent Owner asserted that "perpendicular is not necessary. It is just an explanation of the two types of pressing that are disclosed in the patent." Tr. 24:23–25:2. Patent Owner also asserted that "the '171 patent discloses cover as a flat covering" and that "contacting is covering and covering is happened by flat pressing," but, then, conceded that "directly pressing" as recited in claims 1 and 9 does not require flat or flat

pressing. Tr. 35:3–36:13. Regarding the degree of contact required by directly pressing the membrane to the leather, Patent Owner asserted that the example in the '171 patent evidences that there is inherently "constant contact" between the leather and the membrane because it is waterproof. *Id.* at 37:21–38:2. Petitioner responded that the '171 patent discusses

> the water penetration to the interior of the shoe, not between the leather and the membrane. They are talking about how much gets past the membrane. There is nothing in here that says you get zero penetration of water between the leather and the membrane. The membrane is the barrier that prevents water from getting past that.

Id. at 42:3–10. Petitioner also contends that the Specification "doesn't talk about complete contact in all areas between the dots." *Id.* at 15:12–13.

We agree with Petitioner that the Specification does not disclose a required degree of contact between the membrane and the leather in the regions that are between the dots of adhesive. The '171 patent summarizes the invention as enabling a membrane to be applied directly to leather by providing a surface of the membrane with a glue pattern. Ex. 1001, 1:56–61. The invention is said to "avoid the use of a semipermeable lining and the water penetration between leather and lining." *Id.* at 1:60–61. The title of the invention states "Process for Waterproofing Leather" and describes the leather used in the process as "leather waterproofed by said process." *Id.* at 2:27–28. These disclosures do not define either the word "waterproof" as used in the Specification or the word "directly" as recited in independent claims 1 and 9 to mean that there is constant contact between the membrane and leather such that no water permeates the leather, as Patent Owner contends.

In an embodiment of the invention, heating of the membrane during pressing is said to result in "a perfect adhesion" that does not plug the pores with glue. *Id*. at 2:31–42–45. Heating of the membrane during pressing is carried out also in the single example disclosed in the '171 patent. *Id*. at 3:12. The leather samples in the example are said to have been "waterproofed by the process according to the present invention" and "hot-pressed with a hydrophilic non-porous semi-permeable membrane of polyurethane material having a thickness of 10 μm." *Id*. at 3:9–14. These disclosures of an embodiment and an example do not define "directly pressing" or "waterproofing" or even "perfect adhesion" to mean constant contact between the leather and the membrane or that no water permeates the leather. Therefore, we decline to import such limitations into the term "directly pressing" based on Patent Owner's argument that these properties are present inherently in the embodiment of the example in the '171 patent. Accordingly, we construe "directly pressing" to mean applying pressure without any intervening materials or layers other than the recited adhesive.

C. Obviousness of Claims 1, 2, 5–11, 14, and 15

Petitioner argues that claims 1, 2, 5–11, 14, and 15 would have been obvious over the combination of Thornton, Scott, Hayton, and Macho.[10] Pet. 12–23. Patent Owner disputes the alleged unpatentability of claims 1, 2, 5–11, 14, and 15, supported by the Declaration of Matteo Morlacchi, an

[10] We did not institute on the further combination of U.S. 5,827,477, issued Oct. 27, 1998 ("Macho," Ex. 1009), with Thornton, Scott, and Hayton. Dec. on Inst. 7–8, 13.

employee of Patent Owner. PO Resp. 22–42; Ex. 2014[11] ("Morlacchi Decl.").

After reviewing the complete record, we conclude Petitioner has shown that Thornton, Scott, and Hayton teach or suggest each limitation of claims 1, 2, 5–11, 14, and 15 of the '171 patent, that a person of ordinary skill in the art would have had a reason to combine the teachings of Thornton, Scott, and Hayton, and that a person of ordinary skill in the art would have had a reasonable expectation of success in combining the teachings of Thornton, Scott, and Hayton.

1. Claims 1 and 9

As to independent claims 1 and 9, Petitioner asserts that Thornton teaches forming a waterproof and breathable composite for articles of clothing, including a glove having an inner fabric layer, a middle semi-permeable membrane layer, and an outer leather layer. Pet. 12 (citing Ex. 1003, Abst., 1:10–15, 1:20–23, 1:45–46, 4:31–41, 7:57–68, 21:1–14, 13:9–11). According to Petitioner, Thornton teaches attaching the film layer directly to the leather layer by applying dots of adhesive to the film and using heat and pressure to adhere the film to the leather to form a waterproof and breathable leather glove. *Id*. (citing Ex. 1003, 7:66–68, 8:8–21, 21:1, 21:40–44). Petitioner argues that it would have been obvious to one of ordinary skill in the art to modify Thornton's discontinuous glue pattern to

[11] Patent Owner renumbered and refiled Exhibits 1–14 as Exhibits 2001–2014 in compliance with 37 C.F.R. § 42.63(c). Therefore, we expunge Exhibits 1–14 from the record.

obtain the dot density required by claim 1 or the dot size required by claim 9 based on the further teachings of Scott and Hayton.[12]

Petitioner contends that the discontinuous glue pattern is a matter of optimization as taught by Scott, which teaches optimizing the amount of glue necessary to provide sufficient adhesion to bond the two layers while minimizing the area of blocked micropores. *Id*. at 13 (citing Ex. 1008, 239). Petitioner further contends that Hayton discloses adhesive dots with a density of 10–100 dots/cm^2 and a diameter of 0.2–1 mm for attaching a semi-permeable membrane to apparel. *Id*. at 13, 14 (citing Ex. 1005, 6:24–27). Hayton's ranges are shown by Petitioner to overlap with the claimed ranges of 50–200 dots/cm^2 (claim 1) and 0.1–0.8 mm (claim 9). *Id*.

Petitioner asserts that each of the references are combinable because they are from the same field of endeavor and/or address a problem reasonably pertinent to the problem of providing good adhesion while leaving adhesive free areas to minimize obstruction to permeability faced by the '171 patent inventor. *Id*. at 15 n.4. Scott and Hayton both relate to laminated fabrics for clothing that have a microporous barrier component making them liquid water impermeable and water vapor permeable. Ex. 1008, 239; Ex. 1005, 1:44–51. Petitioner contends that Scott provides a reason for optimizing the amount of adhesive that Thornton and Hayton teach to apply to a semi-permeable membrane, which is to provide good adhesion while maintaining vapor permeability. Pet. 14.

[12] Petitioner's additional reliance on Macho in the Petition does not impact the combination of Thornton, Scott, and Hayton because Hayton also discloses the dot density and dot size required by claims 1 and 9. Ex. 1005, 6:24–27.

Patent Owner contends that Thornton is distinguishable because it waterproofs a leather article rather than an entire leather sheet and it does not "contact and cover the inner surface of the leather glove outer because the membrane is puckered by design such that a significant amount of the surface area of the membrane does not contact the leather, to permit flexibility of the final glove." PO Resp. 24–25 (citing Ex. 1003, 20:67–22:18). Patent Owner further contends that Thornton does not disclose a discontinuous pattern of adhesive between the leather and film layers because the film is ruched and, therefore, the "pattern is necessarily broken by design at the locations of bonding of the ruched film to the inner glove in order to maintain suppleness of the leather glove." *Id*. at 27 (citing Ex. 1003, 7:65, 10:11, 10:25, 23:24). Regarding Scott, Petitioner contends it is not related to claims 1 and 9 because it concerns micropores of PTFE rather than leather pores, and does not provide any particular density or size of adhesive dots. *Id*. at 28, 37. Regarding Hayton, Petitioner asserts that it relates to a corrugated barrier component of a membrane bound to a support fabric and "does not disclose adhesive dot ranges for properly adhering a membrane to leather while preventing water cushion formation." *Id*. at 28–29, 38.

Petitioner replies that Thornton recognizes that articles can be produced from sheets of the composite waterproof material by producing panels or sub-assemblies first and then assembling into an article, such as footwear. Reply 8 (citing Ex. 1003, 6:62–66, 7:13–31). Petitioner also contends that Thornton teaches directly pressing the film to the leather even under Patent Owner's construction of that term because the materials are pressed together "which thus would involve forces perpendicular to the

surfaces of the leather and membrane." *Id*. at 9 (citing Ex. 1003, 21:64–22:8). Petitioner also asserts that there is "complete contact" between Thornton's membrane and the outer leather glove because the ruched barrier component "is stretched over a former . . . when the outer leather glove is drawn onto the barrier component." *Id.* (citing Ex. 1003, 21:64–22:18). Petitioner asserts that "the ruching is between the inner glove and membrane and not between the membrane and the outer glove." *Id*. at 10 (citing Ex. 1003, 21:31–68). Regarding the ruching in Thornton breaking the pattern of adhesive dots, Petitioner contends that Thornton does not teach such a break because "Thornton teaches the puckering of the inner glove 'is multidirectional and consists of relatively flat islands (at the locations of the adhesive dots surrounded by raised folded up lines or regions of material surrounding . . . each island.'" *Id*. at 11 (citing Ex. 1003, 21:55–61). Thus, Petitioner argues, "the dots of adhesive that are spaced apart in this ruched structure are a 'discontinuous glue pattern,' as required by claim 1." *Id*.

Regarding Patent Owner's arguments that Scott and Hayton do not relate to adhering a membrane to leather, Petitioner responds that Thornton teaches that fabric and leather are interchangeable in Thornton's process, which is used to adhere either fabric or leather to film 105. *Id*. at 12–13 (citing Ex. 1003, 7:57–60, 19:54–22:8). Petitioner's position is that because fabric and leather are interchangeable in Thornton's process, the same principle of optimization of adhesive dots to secure fabric to a semi-permeable membrane as taught by Scott and Hayton also applies to adhering a semi-permeable membrane to leather. *Id.* at 13.

We are persuaded by the preponderance of the evidence on the complete record that claims 1 and 9 would have been obvious over the

combination of Thornton, Scott, and Hayton. Petitioner has established that Thornton's process for waterproofing leather by using spaced dots of adhesive in a discontinuous configuration on a semi-permeable membrane that is pressed against the leather meets the requirements of claims 1 and 9 but for the dot density and dot size ranges specified by the claims, respectively. Petitioner also provided a rational underpinning for combining the disclosures of Scott and Hayton, which provide guidance for the density and size of adhesive dots to adhere a semi-permeable membrane to a porous layer. We are not persuaded by Patent Owner's argument that the teachings of Scott and Hayton are unrelated to the problem of adhering a membrane to a leather layer in view of Thornton's disclosure that both leather and fabric material are amenable to its process for waterproofing breathable articles of clothing. Ex. 1003, 7:58–62.

We also are not persuaded by Patent Owner that the combination of Thornton, Scott, and Hayton does not disclose all of the limitations of claims 1 and 9. The ranges explicitly disclosed in Hayton overlap with the ranges recited in claims 1 and 9. Patent Owner does not argue, and the Specification does not indicate, any criticality associated with the portion of the ranges that are not encompassed by Hayton's ranges. *See In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990). Rather, the claimed ranges appear once in the Specification as a preferred embodiment when the pattern of thermoadhesive glue is dots of polyurethane glue. Ex. 1001, 2:37–42. Patent Owner's arguments distinguishing Thornton on the basis that it does not teach constant contact between the membrane and the leather in the regions between the spaced dots of adhesive is not persuasive for the reasons discussed above in connection with Patent Owner's claim construction

argument that this is required by the claim term "directly pressing." In addition, we find that Thornton's semi-permeable membrane completely covers the leather layer in the sense that the leather layer surface faces the membrane surface to form a composite. Thornton explicitly describes drawing the membrane barrier component over a former, applying adhesive to the outer surface of the film, drawing the outer glove layer onto the former, and bonding the layers by pressing. Ex. 1003, 21:64–22:8; Reply 9. Thornton also discloses layers on the former are placed in register (Ex. 1003, 21:33–35) and that the composite can be formed face to face in sheets (*id*. at 6:62–66, 7:13–31; Reply 8).

Patent Owner alternatively argues that Thornton "is not directly pressing the ruched barrier component onto the inner surface of the leather glove" because "the application of pressure in a press is against the outer surfaces of the leather glove outer and through the layers of the ruched barrier component." PO Resp. 25–26. We are not persuaded that pressing together a composite of leather layer, film layer, and liner layer as in Thornton is indirect pressing rather than direct pressing as pressure is applied without any intervening materials or layers between the leather and the membrane other than the adhesive dots. As explained above, the Specification does not preclude pressing through additional layers such as a support sheet, which can be a fabric liner. Ex. 1001, 2:58–67.

In sum, based on the trial record, the preponderance of the evidence supports Petitioner's argument that claims 1 and 9 would have been obvious over the combination of Thornton, Scott, and Hayton.

2. Claims 2, 5–8, 10, 11, 14, and 15

Regarding claims 2, 5–8, 14, and 15, which depend directly from claim 1, Petitioner identifies where these further limitations are also disclosed in Thornton. Pet. 18, 19, 21–23. Regarding claim 10, which recites "[a] leather (1) which is waterproofed by a process according to claim 1," Petitioner cites Thornton's disclosure of a glove comprising leather and semi-permeable film that is "waterproof and breathable." *Id.* at 21–22 (citing Ex. 1003, 7:57–60, 13:9–11, 21:1, 21:7–13). As to claim 11, which requires that the leather according to claim 10 "is made of two or more pieces sewed together," Petitioner argues that stitching leather to form leather articles is known and therefore obvious in view of the cited prior art. *Id*. at 22.

Patent Owner offers no rebuttal with respect to claim 15. *Id*. at 42. Regarding claims 2, 5–8, and 14, Patent Owner relies on the same arguments made with respect to claim 1. PO Resp. 35–36, 42.

Regarding claim 10 and its dependent claim 11, Patent Owner argues that the "directly pressing" limitation in the process of claim 1 "implies a structure of the product where the semi-permeable membrane contacts the entire internal surface of the leather." *Id.* at 40, 42. Similarly, Petitioner contends that the adhesive dot density limitation of claim 1 "implies a structure of the product where a glue pattern adheres the membrane to the internal surface of the leather, wherein the glue pattern is a multiplicity of dots having a density between 50 dots/cm^2 and 200 dots/cm^2." *Id.* Patent Owner contends that these process limitations are not met by the combination of Thornton, Scott, and Hayton, therefore the product-by-

process of claim 10, and its dependent claim 11, are not obvious over the combination. *Id*. at 41, 42.

Petitioner responds that because claim 10 is a product-by-process claim that claims a leather waterproofed by the process of claim 1, claim 10 would have been obvious for the same reasons that claim 1 would have been obvious. Reply 15.

To the extent that the process of claim 1 imparts structural limitations to claims 10 and 11, we determine that claims 10 and 11 would have been obvious over the combination of Thornton, Scott, and Hayton for the same reasons that claim 1 would have been obvious over the combination of the cited references as discussed above. Therefore, the preponderance of the evidence on the complete record shows that claims 1, 2, 5–11, 14, and 15 are unpatentable as obvious over the combination of Thornton, Scott, and Hayton.

D. Obviousness of Claim 3

Claim 3 depends from claim 1 and requires that the membrane "is not porous and carries out the water vapor passage by osmosis."

Petitioner asserts that it would have been obvious to have used a non-porous membrane in the method of Thornton whereby the water vapor transfer through the membrane, as taught by Thornton, would be by osmosis. Pet. 23–24 (citing Ex. 1003, 13:9–11). According to Petitioner, Driskill describes two mechanisms by which semi-permeable membranes transmit moisture or water vapor — "porous diffusion" in the case of porous membranes and "solution-diffusion" in the case of non-porous membranes— and one of ordinary skill in the art would understand Driskill's term "solution-diffusion" to mean osmosis when a non-porous membrane is used.

Id. (citing Ex. 1004, 5:40–44). Petitioner also asserts that Herlihy teaches that non-porous and porous semi-permeable membranes are interchangeable. *Id*. at 24 (citing Ex. 1012, 4:37–38).

Patent Owner contends that claim 3 is not obvious over the cited art for the same reasons that claim 1 is not obvious. PO Resp. 43.

For the same reasons discussed above with respect to claim 1, we determine that the preponderance of the evidence shows that claim 3 would have been obvious over the combination of Thornton, Scott, Hayton, Driskill, and Herlihy.

E. Obviousness of Claim 4

Claim 4 depends from claim 1 and requires that the membrane "is elastic with a grade of elongation higher than 50%."

Petitioner asserts that the elongation requirement of claim 4 is disclosed by Thornton because Thornton teaches that its membrane can be "extended by at least 50%" and "does not break until an elongation of about 200% is reached." Pet. 25 (citing Ex. 1003, 4: 59–60, 18:21–23). In addition, Petitioner argues that Thornton teaches a polyurethane as the membrane material, as does the '171 patent, and Thornton specifically discloses the polyurethane of Loew, which is said to "'recover completely . . . after being stretched 100%.'" *Id*. at 26 (quoting Ex. 1011, 15:43–47, citing Ex. 1001, 2:50–51; Ex. 1003, 21:7–13, 24:40–42). Petitioner also argues that the particular percentage of elongation would have been a matter of optimization as in addition to Thornton, Herlihy and Nomi each recognize the desirability of using elastic or stretchable membranes in apparel. *Id*. at 26–27 (citing Ex. 1012, 3:60–66; Ex. 1013, Title, 1:6–14, 3:29–34, 3:57–60).

Patent Owner contends that claim 4 is not obvious over the cited art for the same reasons that claim 1 is not obvious. PO Resp. 43.

We are persuaded by Petitioner's argument that Thornton discloses the membrane required by claim 4 based on the disclosure in Thornton that the membrane "can be extended by at least 50%" and Petitioner's further evidence that the polyurethane disclosed in Thornton is able to "recover completely . . . after being stretched 100%." Ex. 1003, 4:59–60, 24:40–42; Ex. 1011, 15:43–47. We are also persuaded by Petitioner's arguments that claim 1, from which claim 4 depends, would have been obvious over the combination of Thornton, Scott, and Hayton for the reasons discussed above with respect to claim 1. Based on the complete record, the preponderance of the evidence supports Petitioner's argument that claim 4 would have been obvious over the combination of Thornton, Scott, Hayton, Loew, Herlihy, and Nomi.

F. Obviousness of Claim 12

Claim 12 claims a shoe "comprising an upper of waterproofed leather" and requires that the leather, as recited in claim 10, "is waterproofed by a process according to claim 1."

Petitioner asserts that Driskill teaches waterproof laminates for shoes using a dotted adhesive pattern. Pet. 30 (citing Ex. 1004, 3:50–58, 4:65–67, 12:21–25, 59–65). Petitioner also contends that Thornton teaches that material waterproofed can be leather and made into footwear. *Id*. at 29–30. Petitioner contends that

> one of ordinary skill in the art would have been motivated to use the laminate of Thornton in shoes, using the dot density rendered obvious by the secondary teachings, to provide a well-adhered waterproof and breathable shoe, particularly in view of

> Driskill's recognition that such arrangements can be advantageous in shoes.

Id. at 30.

Driskill specifies that a preferred application for its disclosed breathable, waterproof leather laminates is in "shoe uppers" as required by claim 12. Ex. 1004, 4:66–67. This teaching of Driskill was not disputed during prosecution of the '171 patent. Ex. 1002 (Amendment After Final dated Sept. 9, 2004, 4). As discussed above with respect to claims 1 and 10 from which claim 12 depends, Petitioner has shown by a preponderance of the evidence that the combination of Thornton, Scott, and Hayton would have rendered obvious the process of claim 1 and the waterproofed leather of claim 10. Petitioner also has shown by a preponderance of the evidence that applying the laminate of claims 1 and 10 to a shoe upper would have been obvious in view of Driskill teaching such an application of a waterproofed leather laminate.

Patent Owner contends that claim 12 is not obvious over the cited art for the same reasons that claim 1 is not obvious. PO Resp. 44.

We are persuaded by Petitioner's argument that Driskill discloses the use of a waterproofed leather to form an upper on a shoe. We also find Petitioner's rationale for combining Thornton's waterproof leather laminate with Driskill's teaching of using a waterproof leather laminate in a shoe upper because Thornton teaches a variety of clothing articles may be made, including footwear to be reasonable. Based on the complete record, the preponderance of the evidence in this proceeding shows that claim 12 would have been obvious in view of the combination of Thornton, Scott, Hayton, and Driskill.

G. Obviousness of Claim 13

Claim 13 recites "[a] shoe comprising a sole of waterproofed leather" and requires that the leather, as recited in claim 10, "is waterproofed by a process according to claim 1."

Petitioner contends that Polegato teaches that it is desirable "to waterproof the leather sole of shoes to prevent a user's foot from becoming wet." Pet. 31. Petitioner argues it would have been obvious to use the waterproofed leather laminate taught by the combination of Thornton, Scott, Hayton, and Macho as argued with respect to claims 1 and 10 to provide a shoe with a sole of waterproofed, breathable leather. *Id*.

We instituted this proceeding challenging claim 13 on the combination of Thornton, Scott, Hayton, and Polegato. Dec. on Inst. 13. As discussed above, Petitioner has shown by a preponderance of the evidence that the combination of Thornton, Scott, and Hayton would render the process of claim 1 and waterproof leather of claim 10 obvious. We find that Petitioner's inclusion of Macho is not necessary for this combination because Hayton also teaches the dot density required by claim 1. Ex. 1005, 6:24–27; *see* Pet. 13. Polegato discloses solving the problem of a leather sole absorbing water in wet weather by making the leather sole waterproof and vapor-permeable by bonding leather to a membrane barrier using an adhesive. Ex. 1010, 1:11–20, 2:23–36, 43–48. Applying claims 1 and 10 to a sole would have been obvious in view of Polegato teaching such an application, based on the arguments and evidence presented in the complete record.

Patent Owner contends that claim 13 is not obvious over the cited art for the same reasons that claim 10 is not obvious. PO Resp. 43.

Based on the complete record and for the same reasons that claims 1 and 10 would have been obvious as discussed above, we find the preponderance of the evidence shows that claim 13 would have been obvious in view of the combination of Thornton, Scott, Hayton, and Polegato.

H. Conclusion

For the foregoing reasons, we find the preponderance of the evidence demonstrates that claims 1–15 would have been obvious over the cited prior art.

III. PATENT OWNER'S MOTION TO AMEND

During an *inter partes* review, a patent owner may file a motion to amend the claims of a patent. 35 U.S.C. § 316(d). The proposed amendment is not entered automatically, but only upon the patent owner demonstrating patentability of the substitute claim(s). As the moving party, Patent Owner bears the burden of proof to establish that it is entitled to the relief requested. 37 C.F.R. § 42.20(c); *see Prolitec, Inc. v. Scentair Tech., Inc.*, 2015 WL 7873637, at *7 (Fed. Cir. Dec. 4, 2015).

Patent Owner filed a motion to amend the '171 patent by substituting proposed claims 16 and 17 for claims 1 and 9, contingent on claims 1 and 9 being held unpatentable. PO Mot. 3. As we hold claims 1 and 9 unpatentable, we consider the motion to amend.

Proposed claim 16 is identical to claim 1, except that it includes a "wherein" clause at the end, as follows:

> wherein the surface of the semi-permeable membrane contacting the internal surface of the leather contacts and covers the internal surface of the leather between the dots of the glue pattern.

Id. at 4–5.

Similarly, proposed claim 17 is identical to claim 9, except that it includes the following "wherein" clause at the end that also refers to preventing formation of a water-cushion:

> wherein the surface of the semi-permeable membrane contacting the internal surface of the leather contacts and covers the internal surface of the leather between the dots of the glue pattern to prevent formation of a water-cushion between the internal surface of the leather and the semi-permeable membrane.

Id. at 5.

Patent Owner asserts that written description support for the substitute claims is found in the Specification (Figure 1, 2:31–39, 1:45–50, 1:27–31) and the priority document (Ex. 2002 ¶¶ 1, 3; Ex. 2013 (machine translation of Ex. 2002)). *Id*. at 6. According to Patent Owner, "the membrane necessarily contacts and covers the internal surface of the leather between the dots from the process as described in the '171 patent specification and the Priority Document, as well as from the objects of the invention, wherein the contacting and covering is to prevent formation of a water cushion between the membrane and the leather." *Id*. at 6–7.

A motion to amend claims must clearly identify the written description support for the proposed substitute claims. In particular, 37 C.F.R. § 42.121(b)(1) requires the patent owner to set forth the support in the original disclosure of the patent for each proposed substitute claim. The written description test is whether the original disclosure of the application

relied upon reasonably conveys to a person of ordinary skill in the art that the inventor had possession of the claimed subject matter as of the filing date. *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). Therefore, the written description support must be shown in the original disclosure of the application that issued as the patent. Here, Patent Owner fails to provide any citation to the original disclosure of the application, Application No. 09/838,035 ("the '035 application") that issued as the '171 patent. More specifically, Patent Owner's motion to amend does not cite to the originally-filed specification of the '035 application for the actual claim language of each proposed substitute claim. Although Patent Owner cites to the '171 patent (Ex. 1001), the Italian priority application IT MI98A247 (Ex. 2002), and a machine translation of the Italian priority application (Ex. 2013), that is insufficient to establish written description support for the proposed amendments.

Even if we were to consider the '171 patent Specification in lieu of the original disclosure, Patent Owner has not established written description support for the proposed new claims. Column 1 of the '171 patent states that the prior art method of "sewing inside the leather a fabric lining combined with a semi-permeable film" is "disadvantageous in that it allows water to penetrate anyway under the leather, and therefore, especially if the latter is used for the shoe-manufacture, an undesired water-cushion is formed between the waterproofing fabric and the leather internal surface." Ex. 1001, 1:22–23, 1:27–31. Column 1 goes on to describe "[a]n object . . . is . . . to provide a waterproofing process free from said disadvantages, that is, a process allowing leathers to be made waterproof without preventing the body transpiration and avoiding the use of the above mentioned semi-

permeable internal linings or fastening parts." *Id.* at 1:45–50. Column 2 of the '171 patent states the "semi-permeable membrane 2 . . . covers completely the internal surface of said leather 1" and the method "is carried out by pressing, preferably hot-pressing, the whole of leather and membrane by means of a flat press or a roll press provided with a heating system." *Id.* at 2:31–39.

Although the Specification describes an embodiment illustrated in Figure 1 "completely covering" the leather with the semi-permeable membrane, it does not characterize any contact between the two materials in between the dots of adhesive as Patent Owner's proposed amendments attempt to claim. Ex. 1001, 2:31–34. Patent Owner does not explain why a person of ordinary skill in the art would have recognized that the inventor possessed the claimed subject matter as a whole apart from providing citations to and partial quotations from the Specification. *See* PO Mot. 6–7. The Specification does not describe the invention as preventing water from penetrating the leather layer. The Specification also does not describe the process of hot pressing as causing contact or attachment of the leather layer to the semi-permeable membrane layer between the dots of adhesive. The record lacks evidence that contact between the dots of adhesive necessarily would occur upon hot pressing. The quotations describing the disadvantages of the prior art and the object of the invention omit the portions of the cited sentences that describe the undesired water-cushion of the prior art process as being formed between the waterproofing fabric and the leather internal surface and the object of the invention as "avoiding the use of the above mentioned semi-permeable internal linings or fastening parts." *Compare* PO Mot. 6; Ex. 1001, 1:27–31, 46–50. Therefore, Patent Owner's position that

the proposed amendments are supported by the written description has not been established by a preponderance of the evidence in this proceeding.

Even if the proposed amendments were supported by the '171 patent Specification, the preponderance of the evidence supports Petitioner's argument that "it was well known in the prior art in general to bring a membrane into full contact with a material such as leather to prevent the ingress of water." Pet. Opp. 10–11 (citing Ex. 1004, 12:21–13:7). Driskill describes a process for waterproofing leather by adhering a membrane to a knit fabric and pressing an iron on the fabric side of the leather with an adhesive dot pattern between the membrane and the leather. Ex. 1004, 12:54–65. A waterproof test was performed on the laminate and it passed. *Id*. at 9:49–67, 13:6–7. As discussed above in connection with claims 1 and 9, Scott teaches adjusting the adhesive between a semi-permeable membrane and a porous layer to maintain porosity and Hayton teaches a dot density and dot size of adhesive between a membrane and porous fabric layer that is within the ranges recited in proposed claims 16 and 17, respectively. *See, supra*; Pet. Opp. 14–15.

The preponderance of the evidence does not support Patent Owner's argument that "Thornton, in view of the references and the prior art in general, would not suggest to a PHOSITA any modification to bring the membrane in full contact with the leather between the adhesive dots because doing so would be directly counter to the goals and teaching of Thornton, which achieves suppleness in the leather only through intermittent coupling of the leather and the ruched membrane. PO Mot. 13 (citing Ex. 1003, 7:57–68). Patent Owner's argument is directed to Thornton's puckered barrier component and does not address the combination of Driskill, Scott, and

Hayton, which references do not describe ruching or puckering the membrane/barrier component. Driskill was cited during the prosecution of the '171 patent, discussed and relied upon in the Petition, and, therefore, is known to Patent Owner. Ex. 1001; Ex. 1002 (Final Rejection dated June 16, 2004, 2–4); Pet. 6–8, 29–30. Patent Owner responds that "Driskill teaches and discloses a continuous film of water vapor permeable adhesive used to bond a membrane to leather." PO Reply 9–10. Patent Owner acknowledges that Driskill describes the use of dots of adhesive for breathability, but asserts that disclosure is in the background section and not specifically for leather. *Id*. at 10. We are not persuaded by Patent Owner's argument concerning Driskill because Driskill describes applying adhesive in a dotted pattern in Example 4 in which leather and a membrane are adhered. Ex. 1004, 12:21–26, 12:54–66. In addition, Patent Owner did not dispute that Driskill describes adhering leather and a membrane with a dotted pattern of adhesive between the leather and the membrane during prosecution. Ex. 1002 (Amendment dated Sept. 9, 2004, 4). Therefore, even if the proposed amendments were supported by the written description of the Specification, they would have been obvious in view of the combination of Driskill, Scott, and Hayton.

Patent Owner's motion to amend is denied for failure to establish that it is entitled to the relief requested. *See* 37 C.F.R. § 42.20(c).

IV. PETITIONER'S MOTION TO EXCLUDE

Petitioner moved to exclude Exhibits 2007–2012 and 2014, which were submitted with Patent Owner's Motion to Amend, as bearing no relevance to the patentability of the proposed substitute claims and for

failing to establish that Patent Owner's declarant is qualified to testify as an expert. Paper 18, 1. Resolution of Petitioner's motion is unnecessary to this final written Decision, as we do not rely on any of the challenged evidence in a manner adverse to Petitioner. Accordingly, we dismiss Petitioner's motion to exclude as moot.

V. CONCLUSION

Petitioner has shown, by a preponderance of the evidence, that claims 1–15 of the '171 patent would have been obvious under 35 U.S.C. § 103(a) on the following grounds:

(1) claims 1, 2, 5–11, 14, and 15 over Thornton, Scott, and Hayton;

(2) claim 3 over Thornton, Scott, Hayton, Driskill, and Herlihy;

(3) claim 4 over Thornton, Scott, Hayton, Loew, Herlihy, and Nomi;

(4) claim 12 over Thornton, Scott, Hayton, and Driskill; and

(5) claim 13 over Thornton, Scott, Hayton, and Polegato.

Patent Owner has failed to show, by a preponderance of the evidence, that proposed amended claims 16 and 17 are patentable. Petitioner's motion to exclude is dismissed as moot.

VI. ORDER

Accordingly, it is

ORDERED that claims 1–15 of the '171 patent are unpatentable;

FURTHER ORDERED that Patent Owner's motion to amend is denied;

FURTHER ORDERED that Petitioner's motion to exclude Exhibits 2007–2012 and 2014 is dismissed as moot;

FURTHER ORDERED that Petitioner's and Patent Owner's demonstrative exhibits (Papers 24 and 25) shall be expunged from the record;

FURTHER ORDERED that Patent Owner's Exhibits 1–14 shall be expunged from the record; 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.

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