

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PUMA NORTH AMERICA, INC.,

Petitioner,

v.

NIKE, INC.,

Patent Owner.

U.S. Patent No. 9,375,046

Issue Date: July 28, 2016

Title: ARTICLE OF FOOTWEAR INCORPORATING A
KNITTED COMPONENT WITH INLAID TENSILE ELEMENTS
AND METHOD OF ASSEMBLY

Case Number: Unassigned

PETITION FOR *INTER PARTES* REVIEW

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LIST OF EXHIBITS

| Number | Description |
|---------------|--|
| 1001 | U.S. Patent No. 9,375,046 (the “’046 Patent”) |
| 1002 | File History for the ’046 Patent |
| 1003 | U.S. Patent Application No. 2014/0310984 (“Tamm”) |
| 1004 | excerpts from NIKE’s Supplemental LR 16.6(d)(1) Preliminary Patent-Related Disclosures, <i>NIKE, Inc. v. PUMA North America, Inc.</i> , Case No. 1:18-cv-10876 (D. Mass. Jan. 10, 2019) (“Infringement Contentions”) |
| 1005 | Declaration of Michael Steszyn |
| 1006 | CV of Michael Steszyn |

I. INTRODUCTION

Pursuant to 35 U.S.C. §§ 311–19 and 37 C.F.R. § 42.100 *et seq.*, Petitioner PUMA North America, Inc. (“Petitioner”) respectfully requests that the Board initiate *inter partes* review of claims 1–2 and 17–18 (collectively, “the Challenged Claims”) of U.S. Patent No. 9,375,046 (Ex. 1001, the “’046 Patent”), which purports to be assigned to NIKE, Inc. (“Patent Owner”). There is a reasonable likelihood that Petitioner will prevail with respect to at least one of the claims challenged in this Petition.

II. BACKGROUND

A. Overview of the Technology

According to the ’046 Patent, conventional articles of footwear generally include two primary elements: an upper and a sole structure. Ex. 1001 at 1:23–24. The upper and sole structure form a void fit to receive a foot. *Id.* at 1:24–26. Uppers are conventionally manufactured from a variety of materials, including textiles. *Id.* at 1:51–55.

In the prior art, as described in the background section of the ’046 Patent, it was understood that the time and expense associated with transporting, stocking, cutting, and joining the material elements used in an upper increases with the number and type of material elements incorporated into an upper. *Id.* at 1:64–67. The amount of waste material and difficulty in recycling the upper also increases.

Id. at 2:1–6. The '046 Patent acknowledges that a known prior art approach to reduce waste while increasing manufacturability and recyclability is to reduce the number of material elements used in an upper. *Id.* at 2:6–9.

B. The '046 Patent Specification

The '046 Patent claims “[a]n article” such as one that “can be incorporat[ed] into an upper of an article of footwear.” Ex. 1001 at 5:51–52. The article enables a purportedly desirable visual effect of hiding and revealing colors on the surface of the upper as the upper stretches and contracts, such as would happen when the wearer of a shoe constructed with an upper made of the article walks. *Id.* at 18:34–52; Declaration of Michael Steszyn (Ex. 1005) at ¶¶ 34-37.

In order to accomplish this, the '046 Patent describes and claims that the article is a knitted component constructed to include two separate types of areas, at least one of which is elastic. '046 Patent. Ex. 1001 at 4:64–66, Claim 1. The first of the types of areas described and claimed by the '046 Patent is the “webbed areas.” *Id.* at 2:13–20. The second is the “tubular structures,” which are adjacent to and alternate with the webbed areas.” *Id.* at 10:16–25. Because they are portions of a knit component, both areas are constructed of a number of courses of stitching. *Id.* at Claim 1.

Because at least one of the areas is elastic, the article is able to stretch from a so-called “neutral position” to an “extended position” when a force is applied to it,

such as during walking or running. *Id.* at 5:14–30; Ex. 1005 at ¶¶ 34–37. When in the unstretched, neutral position, the '046 Patent states that the tubular structures can hide from visual observation portions of the webbed areas that are between them. Ex. 1001 at 12:41–61. When the article is stretched to an extended position, the tubular structures are spread further apart, revealing for visual observation portions of the surface of the webbed areas that were previously hidden. *Id.*

C. The '046 Patent Prosecution History

The application for the '046 Patent was filed on November 7, 2014, '046 Patent File History (Ex. 1002) at 118–24, and claims priority to a provisional application filed on September 30, 2014. *Id.* at 118–24. Because these filings were after March 16, 2013, the first inventor to file provisions of the Leahy-Smith America Invents Act (AIA) apply. *See* 35 U.S.C. § 100.

The application that lead to the '046 Patent was the subject of a single office action during prosecution. Ex. 1002 at 695. Following that office action, the applicants amended the claims and argued that the amended claims were patentable over the cited prior art references. *Id.* at 733–42. Before any further action was issued by the Patent Office, the applicants conducted a telephone interview with the Examiner. *Id.* at 753–54. They then filed a supplemental response to the office action that further amended the claims to include additional limitations that (1) “the webbed areas having a front surface;” (2) “wherein in the neutral position, a

first area of the front surface is hidden from visual observation from a first viewing perspective;” and (3) “wherein in the extended position, the first area of the front surface is revealed for visual observation from the first viewing perspective.” *Id.* at 748–54. A notice of allowance was then issued by the Patent Office. Further details of the prosecution history will be discussed below to the extent they relate to the construction of certain terms used in the claims of the ’046 Patent.

D. The ’046 Patent Claims

The ’046 Patent recites 20 claims. Among them are Challenged Claims 1–2 and 17–18. Independent claim 1 is as follows:

1. An article comprising:
 - [a] a plurality of webbed areas that include a plurality of courses formed from a first yarn, the webbed areas having a front surface, [b] the webbed areas configured to move between a neutral position and an extended position, the webbed areas being biased to move toward the neutral position and
 - [c] a plurality of tubular structures that are adjacent to the webbed areas, the tubular structures including a plurality of courses;
 - [d] wherein at least one of the webbed areas or tubular structures is configured to stretch to move the webbed areas to the extended position in response to a force applied to the article

[e] wherein in the neutral position, a first area of the front surface is hidden from visual observation from a first viewing perspective, and

[f] wherein in the extended position, the first area of the front surface is revealed for visual observation from the first viewing perspective.

Claims 2, 17, and 18 depend from claim 1, and are as follows:

2. The article of claim 1, wherein the article is associated with a longitudinal direction and a lateral direction;

[a] wherein the plurality of webbed areas and the plurality of tubular structures extend along the longitudinal direction;

[b] wherein the plurality of webbed areas and the plurality of tubular structures are spaced apart in the lateral direction, and

[c] wherein the article is configured to stretch in the lateral direction between the neutral position and the stretched position, the article biased toward the neutral position.

17. The article of claim 1, wherein the article includes a knitted component, the knitted component comprising a plurality of webbed areas and the plurality of tubular structures.

18. The article of claim 17, wherein the knitted component is formed of unitary knit construction.

III. LEVEL OF ORDINARY SKILL

As of the earliest claimed priority date of the '046 Patent — September 30, 2014 — a person having ordinary skill in the art relevant to the patent would have had at least three years of experience in knitted footwear developmentdesign in an industrial context with a focus on footwear. Ex. 1005 at ¶¶ 38–43.

As explained by Mr. Steszyn, a person of ordinary skill in the art would have a broad understanding of shoemaking in general, including aspects such as merchandising, design, product development, commercialization, costing, and/or manufacturing, because all aspects are so interdependent on each other. *Id.* A person of ordinary skill in the art would have an understanding of the product cycle for the process of designing, developing, and bringing a new product to market. *Id.* He or she would also understand that there are some key review milestones where upper material designs are reviewed and considered, such as textiles, leathers, synthetics, or other types of materials used for upper construction. *Id.* A person of ordinary skill in the art would have some understanding and knowledge of the available and varied ranges of typical construction methods within a product cycle. *Id.* In addition, a person of ordinary skill in the art would have a basic knowledge of the functional requirements of footwear and a comprehensive understanding of

the range of material choices, as well as construction techniques and processes used to create the various parts of a shoe and to assemble them in an effective manner. *Id.* A person of ordinary skill in the art would also explore any aesthetic, cost reduction, production efficiency or recycling opportunities, suggested by the knit construction. *Id.*

IV. CLAIM CONSTRUCTION

“In an *inter partes* review proceeding, a claim of a patent ... shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). Therefore, the claims of the '046 Patent subject to *inter partes* review are construed pursuant to *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc) (holding that claim terms are given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art, at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of record). Petitioner does not believe that any claim terms other than those addressed below need to be construed for the purposes of the requested *inter partes* review.

A. Webbed Areas

Claim 1 of the '046 Patent requires “a plurality of *webbed areas* that include a plurality of courses formed from a first yarn, the webbed areas having a front surface.” Ex. 1001 at 32:40–59. As explained below, the term “webbed area” should be construed as a “knit base.”

The patent broadly describes “webbed areas” as simply a knit base. In particular, Figure 8 of the patent (reproduced below) shows “in detail” “a portion of knitted component 100 ... in a flattened configuration. *Id.* at 17:4–13. This component includes “[a] representative portion of webbed areas 128 and a representative portion of a knit layer of tubular rib structure 126.” *Id.* at 17:14–15.

“Webbed area” is a term of art that is commonly used in the field of footwear design. Ex. 1005 at ¶¶ 44–48. A person of ordinary skill in the art would understand webbed area to refer to a “knit base.” The '046 patent uses the term “webbed area” in accordance with its usual definition. *Id.*

using a reverse jersey knit pattern,” *id.* at 17:32–33, or “webbed area 128 can be knitted using a front jersey stitching pattern,” *id.* at 17:30–31.

Further exemplary webbed areas are described throughout the specification without limitations other than that they are a knit base. For example, the patent provides the following descriptions of embodiments of webbed areas:

- “Generally, webbed areas 128 may be connecting portions between various elements and/or components of knitted component 100. Webbed areas 128 are formed of unitary knit construction with the remaining portions of knitted component 100 and may serve to connect various portions together as a one-piece knit element. ... In different embodiments, webbed areas 128 can be an area of knitted component 100 comprising one knit layer.” *Id.* at 7:45–53.
- “Webbed areas 128 and tubular rib structures 126 of knitted component 100 will now be discussed in greater detail. In some embodiments, webbed areas 128 can be elongated and substantially straight, as shown in FIGS. 1–3. More specifically, webbed areas 128 can extend longitudinally along a respective web axis 130, one of which is indicated in FIG. 1 as an example. Webbed areas 128 can include a first longitudinal ends 134 and a second longitudinal ends 136, as shown in FIG. 2. ...” *Id.* at 9:21–29.

- “Additionally, in some embodiments, as shown in FIG. 2, first longitudinal ends 134 of webbed areas 128 can be disposed proximate first edge 116 of knitted component 100, and second longitudinal ends 136 of webbed areas 128 can be disposed proximate second edge 118 of knitted component 100.” *Id.* at 9:44–46.
- “Furthermore, in some embodiments, first longitudinal ends 134 of webbed areas 128 and first longitudinal ends 138 of tubular rib structures 126 can cooperate to define first edge 116 of knitted component 100. Similarly, second longitudinal ends 136 of webbed areas 128 and second longitudinal ends 140 of tubular rib structures 126 can cooperate to define second edge 118 of knitted component 100 in some embodiments.” *Id.* at 9:54–61.
- “It should be understood that in some embodiments, webbed areas 128 can be stretched to a greater extent relative to other embodiments, resulting in a substantially flattened shape of knitted component 100. In these embodiments, webbed areas 128 may comprise a relatively more planar than rounded shape.” *Id.* at 10:5–10.
- “In some embodiments, webbed areas 128 of knitted component 100 can have a similar shape and dimensions to other webbed areas 128. In other embodiments, the shape and dimensions of webbed areas 128 can vary across knitted component 100.” *Id.* at 10:11–15.

- “Each webbed area or tubular rib structure may be referred to as a section of knitted component 1100.” *Id.* at 21:55–56.

The prosecution history of the '046 patent also supports the construction of “webbed areas” as “portions of a knitted component.” During prosecution, the examiner described “webbed areas” as areas of “knitted loops.” Ex. 1002 at 697. In particular, the examiner asserted separate rejections of claim 1 based on two references: Kuroda and Woolley. *Id.* at 697–700. The examiner asserted that both of these references taught a knitted component including a plurality of webbed areas “configured to move between a neutral position and an extended position” and commented that it “is inherently well known [that] knitted loops allow for extension and recovery of the knit structure.” *Id.* at 697, 698–99. Similarly, with respect to claim 8, the examiner asserted a rejection based on a third prior art reference: Dua. *Id.* at 700–02. According to the examiner, a “portions [of Dua] between ribs 42” taught a knitted component including a plurality of webbed areas. *Id.* at 701. Specifically, the examiner asserted that “Dua generically sets forth the web ... areas being knitted [but] do[es] not expressly set forth a specific second yarn.” *Id.* In their initial response to these rejections, the applicants asserted, with minimal to no explanation, that the cited references did not teach webbed areas. *Id.* at 740–41. After an interview with the examiner, however, the applicants filed a “Supplemental Amendment” that did not argue that the references did not teach

“webbed areas,” *id.* at 753–54, but instead added additional limitations (corresponding to claim elements 1[e] and [f]), *id.* at 748, that the examiner considered sufficient for allowance, *id.* at 919.

Accordingly, based on the specification and prosecution history of the ’046 Patent, “webbed area” should be construed as a “knit base.”

B. Tubular Structure

Claim 1 of the ’046 Patent requires “a plurality of *tubular structures* that are adjacent to the webbed areas, the tubular structures including a plurality of courses.” Ex. 1001 at Claim 1. As explained below, the term “tubular structure” should be given its plain and ordinary meaning (*i.e.* “tube shaped structure”). *See* Ex. 1005 at ¶¶ 49–50.

Exemplary tubular structures are described throughout the specification of the ’046 Patent. *See, e.g.*, Ex. 1001 at 2:20–27, 10:16–32. In each of the embodiment, the “tubular structures” are consistently described as tube-shaped knitted components. For example, the patent describes that “[g]enerally, tubular rib structures 126 can be areas of knitted component 100 constructed with two or more co-extensive and overlapping knit layers” and that “[t]wo or more knit layers may be formed of unitary knit construction in such a manner *so as to form tubes or tunnels*, identified as tubular rib structures 126, in knitted component 100.” *Id.* at 7:19–22 (emphasis added). The tube shape of the tubular rib structure permits “the

central area ... [to] be configured such that another element (e.g., a tensile element) ... located between and pass through the hollow between the two knit layers forming [the] tubular rib structures 126.” *Id.* at 7:26–30. While the patent describes that the tubular structures can have various cross-sectional shapes, *see, e.g., id.* at 7:38–44 (“In some embodiments, tubular rib structures 126 can generally be shaped as a cylinder. ... In other embodiments, tubular rib structures 126 can be shaped as a generally circular or elliptical cylinder.”), it consistently describes them as tube shaped. For example, the patent describes:

- “In different embodiments, tubular rib structures 126 can define one or more hollow tubes. A hollow tube 112 may be a generally unsecured area disposed between first curved portion 416 and second curved portion 418 of tubular rib structure that has the configuration of a tunnel or channel. In some embodiments, first tubular structure 146 may comprise a generally cylindrical or elliptical shape, with hollow tube 112 extending throughout the length of first tubular structure 146 in a longitudinal direction 102. In some embodiments, hollow tube 112 may form a tunnel within tubular rib structures 126, and may extend partway along the length of tubular rib structures 126. In other embodiments, hollow tube 112 may extend throughout the full length of tubular rib structures 126. The diameter of one hollow

tube and the diameter of other hollow tubes may differ in some embodiments, as discussed further below.” *Id.* at 10:66–11:14.

- “In different embodiments, end portions of tensile elements 600 can enter and/or exit first longitudinal ends 134 of tubular rib structures and/or second longitudinal ends 136 of tubular rib structures. Tensile elements 600 may be adjusted in tautness, length, friction, or other aspects. In some embodiments, a tensile element may be anchored at any point along its length to stabilize or inhibit the movement of the tensile element. For example, in some cases, tensile elements 600 may be anchored at one or more longitudinal ends, to prevent their ends from being pulled through one of the tubular rib structures beyond a designated point. In other cases, a single tensile element may be looped through two or more tubular rib structures, which may prevent tensile elements from being pulled into tubular rib structures beyond a certain point.” *Id.* at 16:35–48.

Accordingly, based on the specification of the ’046 Patent, “tubular structure” should be given its plain and ordinary meaning (*i.e.* “tube shaped structure”).

C. Course

Claim 1 of the '046 Patent requires “a plurality of webbed areas that include a plurality of *courses* formed from a first yarn” and “a plurality of tubular structures that are adjacent to the webbed areas, the tubular structures including a plurality of *courses*.” Ex. 1001 at Claim 1. As explained below, the term “course” should be construed as “row of loops.”

The word “course” is a term of art in knitting and textile manufacturing, referring to a row of loops.” Ex. 1005 at ¶¶ 51–53.

The term “course” as used in the patent has its plain and ordinary meaning in the art. For example, the patent describes that “structures or elements include at least one course in common” when they “shar[e] a common yarn” Ex. 1001 at 6:1. The patent also describes that courses can be made of “other knit material.” *Id.* at 5:66. The patent consistently describes *a* course as being formed from *a* yarn. *See, e.g., id.* at 17:8–9 (“a plurality of courses formed from a first yarn”), 21:34 (“a plurality of courses formed from a second yarn”), 21:5–7 (“an additional course 1004 may be knit using second yarn 812 to complete the formation of tubular rib structure 126”).

Accordingly, based on the specification of the '046 Patent and the understanding of a person of ordinary skill in the art, “course” should be construed as “row of loops.”

D. Neutral Position/Extended Position

Claim 1 of the '046 Patent requires a “the webbed areas configured to move between a *neutral position* and an *extended position*.” As explained below, the term “neutral position” should be construed as “position assumed in the absence of an applied force” and the term “extended position” should be construed as “position assumed in response to load.”

The '046 Patent describes “neutral position” as follows a “relaxed” or “unstretched” position. Ex. 1001 at 12:29–33 (“The first position of knitted component 100 shown in FIGS. 1 and 4 can also be referred to as an unstretched position or a neutral position in some embodiments.”), 8:28–30 (“[I]n some embodiments, first transition 420 can be closer to second transition 422 in the relaxed or neutral position than in the extended or stretched position.”): The patent describes that “[t]he webbed areas are biased to move toward the neutral position” and that they “configured to stretch from the neutral position to the extended position in response to a force applied to the webbed areas.” Ex. 1001 at 2:40–44. “When the load is removed, the resilience of knitted component 100 and biasing provided by webbed areas 128 and tubular rib structures 126 can provide recovery of knitted component 100 back to the position of FIG. 4 [*i.e.*, the neutral position].” *Id.* at 13:27–31; *see also* Ex. 1005 at ¶¶ 54–55.

Thus, based on the specification of the '046 Patent, a person of ordinary skill in the art would understand “neutral position” to mean “position assumed in the absence of an applied force” and “extended position” to mean “position assumed in response to load”

V. STATEMENT OF RELIEF REQUESTED (37 C.F.R. § 42.22(A)(1)) AND IDENTIFICATION OF CHALLENGE (37 C.F.R. § 42.104(B))

Petitioner requests that *inter partes* review of the Challenged Claims be instituted because this Petition establishes a reasonable likelihood that the Petitioner will prevail with respect to at least one claim, and that the Board cancel the Challenged Claims as unpatentable. This Petition is based on the following grounds:

| Ground | Claim(s) | Statute | Patent(s)/Printed Publication(s) |
|--------|------------|---------|--|
| 1 | 1–2, 17–18 | § 102 | U.S. Patent Application No. 2014/0310984 (Ex. 1003, “Tamm”) |
| 2 | 1–2, 17–18 | § 103 | Tamm in view of the knowledge of a person of ordinary skill in the art |

VI. STATEMENT OF REASONS FOR RELIEF REQUESTED (37 C.F.R. § 42.22(A)(2))

A. Overview of the Cited Prior Art

The application for Tamm was filed on April 21, 2014 and Tamm published on October 23, 2014. Ex. 1003 at cover. Accordingly, Tamm is prior art to the '046

Patent under 35 U.S.C. § 102(a)(1) and (2). Tamm was not considered during the prosecution of the application that issued as the '046 Patent.

As with the '046 Patent, Tamm describes “uppers for a shoe, particularly a sports shoe.” Ex. 1003 at abstract. Also similarly, the Tamm upper is construed as knitted component — a “one-piece knitwear” — construed to include two separate types of areas, both of which have differing elasticities. *Id.* The first of the types of areas described by Tamm is its “first partial areas.” *Id.* at ¶ 207. The second is its “second partial areas,” which may be manufactured” so as to form tubes or “tunnels.” *Id.* at ¶ 100. Tamm describes that these first and second partial areas may be arranged to “run substantially parallel to one another” in an alternating manner, such as shown in Figures 9 and 12 (reproduced below). *Id.* at ¶ 13.

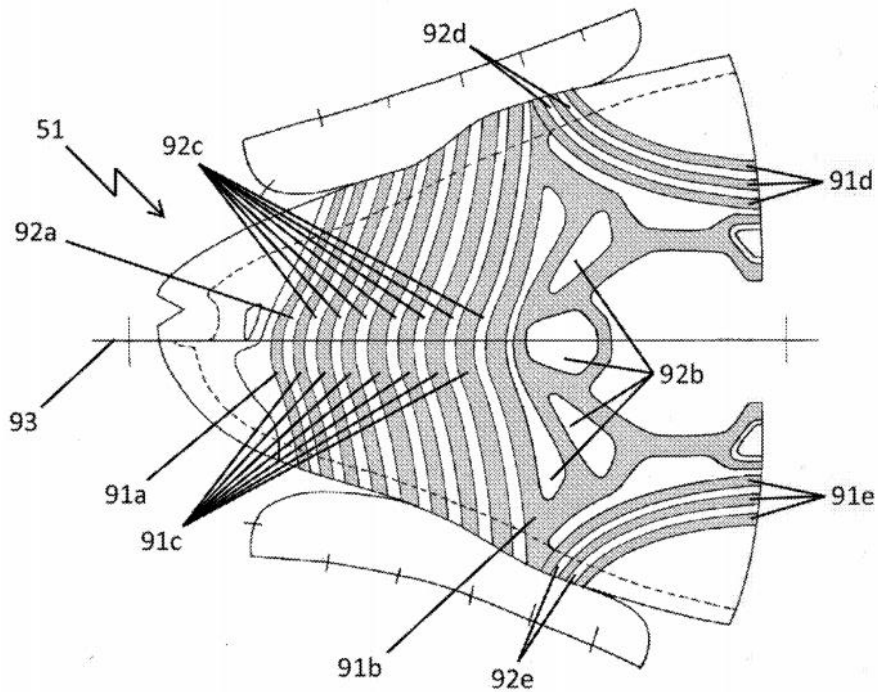
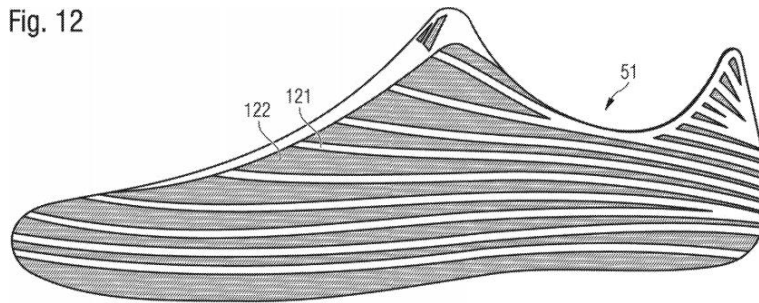


Fig. 9

Fig. 12



Tamm further describes that its first and second areas may be “weft-knitted,” “weft-warped,” or “warp-knitted.” *Id.* at ¶¶ 12, 49. As shown in Figure 8 (reproduced below), this enables the areas to be constructed of a number of courses of stitching. *Id.* at Fig. 8, ¶ 76.

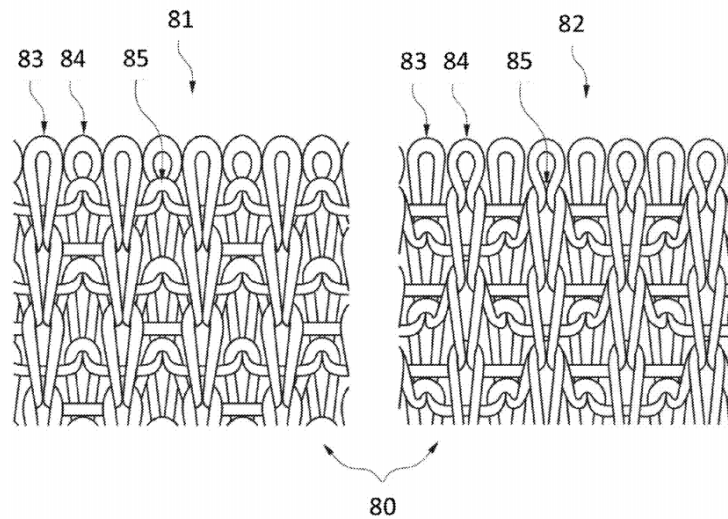


Fig. 8

Tamm teaches that a shoe upper constructed with its techniques can be used to produce desirable visual effects, while minimizing waste during the manufacturing process. See *id.* at ¶¶ 8, 111–13, 127; Ex. 1005 at ¶¶ 57–63.

Tamm acknowledges the importance and value of visual effects in this invention, Ex. 1003 at ¶¶ 111–12, giving examples of varying mesh opening size

and knit constructions using front side and back side colored yarn to achieve specific visual effects. *Id.* at ¶ 113; Ex 1005 at ¶¶ 57–63. Thus, the combination of different colored areas, 3D structures and stretchable web will produce the effect of hiding a front surface at rest, and revealing said surface under load. Ex 1005 at ¶¶ 56–63

The potential for added visual interest to articles of footwear based on the disclosure of Tamm would be of great importance to a person of ordinary skill in the art, considering the visual nature of the shoe business and importance of any cost reduction. *Id.* This omnipresent pressure would encourage any person of ordinary skill in the art to explore any visual implications of Tamm, whether express, inherent, or in combination with a person of ordinary skill in the art’s pre-existing knowledge. *Id.*

Based on the disclosure of Tamm, a person of ordinary skill in the art would necessarily understand how to achieve visual effects by obscuring the surface area of knitwear. *Id.* Tamm expressly discloses a number of visual effects that are applications of the principle of one surface obscuring another. *Id.* For example, Tamm explains that, “[c]olored areas with several colors may be created by using a different thread and/or by additional layers. In transitional areas, smaller mesh openings (smaller needle sizes) are used in order to achieve a fluent passage of colors.” Ex. 1003 at ¶ 111. Those transitions between colors, using different layers

and mesh openings, rely on the principle of one colored area obscuring another.

Tamm further discloses knitting techniques that rely on the principle of obscuring visibility from a front viewing perspective to achieve a visual affect. For example, in Jacquard knitting, “only one yarn appears on the visible side of the product and the respective other yarn runs invisibly on the other side of the product.” *Id.* at ¶ 113. Tamm discloses an extensive range of opaque fibers and yarns which may be used in knitwear. *Id.* at ¶¶ 131–58. A person of ordinary skill would necessarily understand, based on Tamm’s explicit disclosures, that visual effects may be achieved by obscuring the surface area of knitwear. Ex. 1005 at ¶ 35.

Moreover, Tamm explains that “[t]hree-dimensional knitwear] may be combined with structural variations and/or variations of the number of stitches in the direction of the course ... [whereby] [c]ontours, structures, knobs, curvatures, notches, openings, fasteners, loops and pockets may be integrated into the knitwear in a single process.” *Id.* at ¶¶ 87–89. A person of ordinary skill in the art would inherently understand from Tamm’s disclosure that the second partial areas of Tamm could be constructed of three-dimensional, opaque knitwear that would create a visual effect by obscuring the surface of first partial areas when in an unstretched, close together position, and revealing the hidden surface when stretched apart. Ex. 1005 at ¶¶ 60–63.

Accordingly, as described in more detail below, Tamm teaches and/or renders obvious each of the limitations of the Challenged Claims.

B. The Challenged Claims Are Anticipated and/or Obvious

1. Ground 1: The Challenged Claims Are Anticipated by Tamm

As shown below, Tamm discloses each of the elements of the Challenged Claims, either explicitly or inherently.

i. Independent Claim 1

- a. **Element 1[a]: “An article comprising: a plurality of webbed areas that include a plurality of courses formed from a first yarn, the webbed areas having a front surface”**

Tamm discloses “[a]n article comprising[] a plurality of webbed areas that include a plurality of courses formed from a first yarn, the “webbed areas” having a front surface,” as required by claim element 1[a] of the ’046 Patent. Ex. 1005 at ¶¶ 65–70.

In particular, Tamm discloses “a shoe upper for a shoe [that] comprises least one first partial area and at least one second partial area, which are manufactured as one-piece knitwear.” Ex. 1003 at ¶ 40. The shoe upper of Tamm is “[a]n article” as recited in the preamble of claim 1 of the ’046 Patent. The “first partial area” of Tamm corresponds to the “plurality of webbed areas that include a plurality of courses formed from a first yarn, the webbed areas having a front surface.”

As discussed above in § IV.A, a “webbed area” is a “knit base.” Tamm discloses that its “first partial area” is a knit base. Specific embodiments of “first partial areas” are elements 91a, 91b, 91c, 91d, and 91e of Figure 9 and element 121 of Figure 12, which are reproduced below.

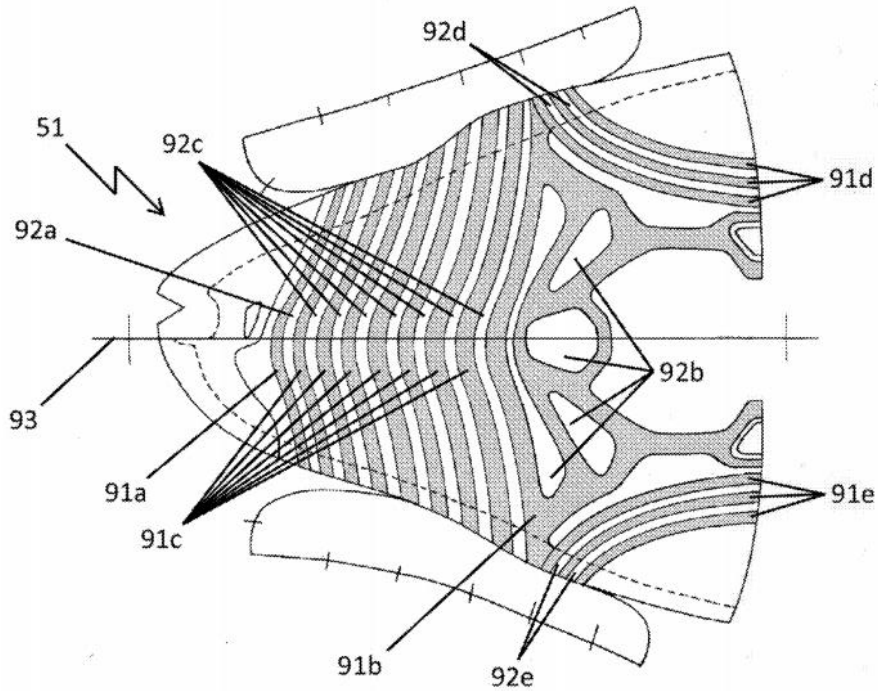


Fig. 9

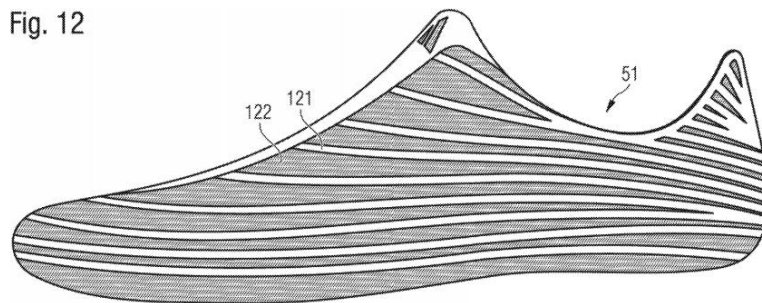


Fig. 12

Tamm discloses that these “first partial areas” are part of a shoe upper that is “manufactured as one-piece knitwear.” Ex. 1003 at ¶ 40, Figs 9, 12.

Moreover, Tamm discloses that its first partial areas (*i.e.*, its webbed areas) include a plurality of courses formed from a first yarn. *See, e.g., id.* at ¶ 40 (“the first partial area comprises a first yarn”). Tamm describes that the first partial area “may be effected on a weft-knitting or warp-knitting machine,” *id.* at ¶ 44, and, in connection with Figure 8 (reproduced below) depicts the plurality of courses formed of a first yarn that can form the first partial area made of “a weft-knitted fabric,” *id.* at ¶ 174 (“FIG. 8 depicts a weft-knitted fabric having a weft-knitted layer made from a first yarn”); *see also* Ex. 1001 at 6:14–16 (describing that “any suitable knitting process may be used to produce knitted component 100 formed of unitary knit construction, including, but not limited to a warp knitting or a weft knitting process”).

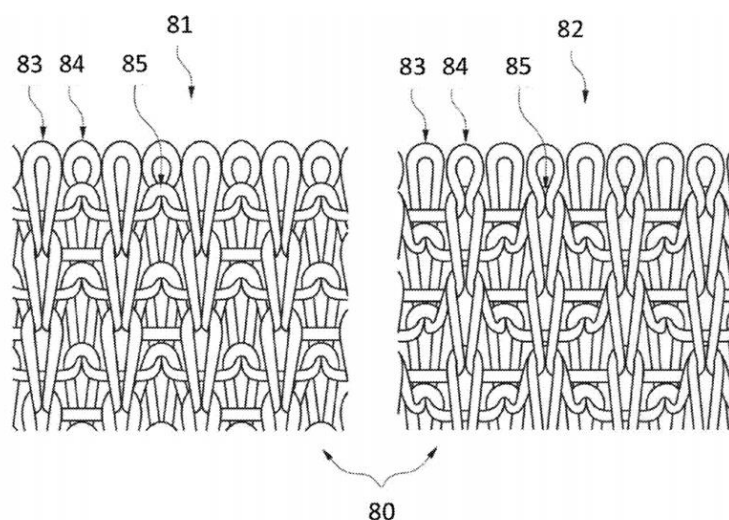


Fig. 8

As described in § IV.C above, a “course” is a “row of loops.” As shown in Figure 8, the first partial area of Tamm includes a plurality of courses that are rows

of loops made of a single length of yarn (*i.e.* first yarn) or other knit material. In particular, Tamm describes that the knitwear of Figure 8 includes “a first weft-knitted layer 83 made from a first yarn.” Ex. 1003 at ¶ 175. Multiple courses made from the first yarn are depicted in Figure 8. *Id.* at Fig. 8. Figure 8 of Tamm further shows that the “first partial area” has a front surface. *Id.* at ¶ 175 (“FIG. 8 particularly depicts a front view 81”).

Accordingly, Tamm discloses “[a]n article comprising a plurality of webbed areas that include a plurality of courses formed from a first yarn, the webbed areas having a front surface.”

b. Element 1[b]: “the webbed areas configured to move between a neutral position and an extended position”

Tamm discloses “the webbed areas configured to move between a neutral position and an extended position,” as required by claim element 1[b] of the ’046 Patent.

In particular, Tamm discloses that its first partial area can be “stretched” — *i.e.*, moved between a neutral position and an extended position. *See* Ex. 1003 at ¶ 47 (“The first partial area and the second partial areas may be arranged such that during wearing of the shoe the first partial area is stretched more than the second partial area.”). As discussed above in § IV.D above, a “neutral position” is a “position assumed in the absence of load” and an “extended position” is a “position

assumed in response to load.” Tamm discloses that its first partial area stretches in response to load. *See* Ex. 1005 at ¶¶ 71–74.

Tamm teaches how the elasticity of its areas can be determined. Specifically, Tamm teaches that “[e]lasticity may be specified as Young’s modulus,” which is the ratio of the tensile stress and to tensile strain (*i.e.*, resulting elongation). Ex. 1003 at ¶ 45; Ex. 1005 at ¶¶ 71–74. Moreover, Tamm teaches that “a more elastic yarn has a lower Young’s modulus than a less elastic yarn.” Ex. 1003 at ¶ 45. Tamm further discloses that “the first partial area may comprise a Young’s modulus of 0.6 MPa whereas the second partial area may comprise a Young’s modulus of 1.88 MPa.” *Id.* at ¶ 46. “Due to this arrangement, the upper yields in the areas in which it is subject to particularly great stretching during wear.” *Id.* at ¶ 47. Taking advantage of this stretchability, Tamm “supports the movement of the feet” by enabling its “first partial area 91a [to] undergo[] greater stretching than the second partial area 92a during walking or running.” *Id.* at ¶ 196.

Based on this disclosure from Tamm, a person of ordinary skill in the art would understand that the first partial area, *i.e.*, the webbed area, is in a neutral position when, for example, the wearer of a shoe made with the Tamm upper is at rest, and that the first partial area, *i.e.*, the webbed area, would stretch to an extended position when forces are applied to it, such as when the wearer is walking or running. Ex. 1005 at ¶¶ 71–74.

Accordingly, Tamm discloses “the webbed areas configured to move between a neutral position and an extended position.”

c. Element 1[c]: “the webbed areas being biased to move toward the neutral position”

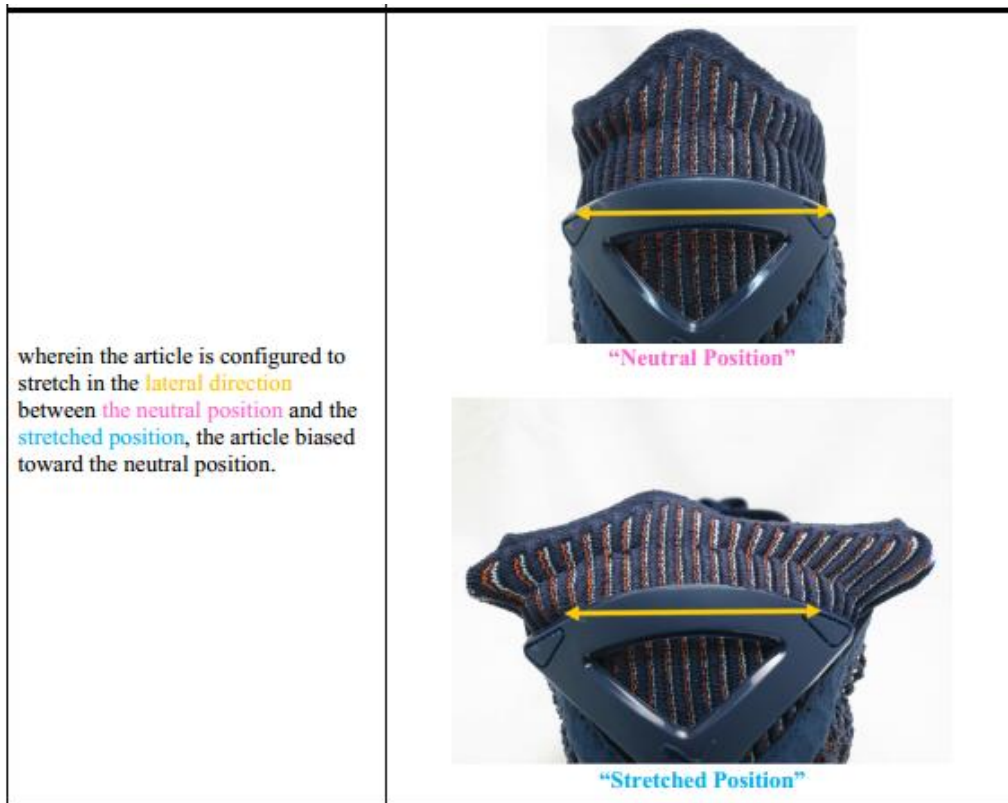
Tamm discloses “the webbed areas being biased to move toward the neutral position,” as required by claim element 1[c] of the ’046 Patent. *See* Ex. 1005 at ¶¶ 75–76.

As discussed with respect to claim element 1[b] above, *see* § VI.B.1.i.b *supra*, Tamm discloses that its first partial area can be “stretched,” *i.e.*, moved between a neutral position and a second position. *See, e.g.*, Ex. 1003 at ¶¶ 46–49, 196. Tamm further discloses that the first partial area stretches from a neutral position to an extended position when a force is applied to it, such as when a wearer is walking or running. *Id.*

Based on this disclosure, a person of ordinary skill in the art would understand that the first partial area is biased toward its neutral position (*i.e.*, minimum length) in the absence of an applied force. Ex. 1005 at ¶¶ 75–76. As explained by Mr. Steszyn, a person of ordinary skill in the art would understand that an elastic material such as that disclosed by Tamm that undergoes a stress less than its yield strength will return to its original form when the stress is removed, and an elastic material such as that disclosed by Tamm that undergoes a stress greater than its yield strength will return towards its original form when the stress

is removed. *Id.* Because the elastic first partial area returns to or toward its original form when stress is removed from it, it is “biased to move toward [its] neutral position.” *Id.*

This accords with how Patent Owner is alleging that this limitation is met by the accused products in the District Court Action. There, Patent Owner accused Petitioner’s IGNITE Speed NetFit shoe of infringing the Challenged Claims. Infringement Contentions (Ex. 1004) at 128. As shown in the excerpts from Patent Owner’s Infringement Contentions below, Patent Owner identified an article in its unstretched, unloaded position as satisfying the “neutral position,” contrasting with the Patent Owner’s identification of the loaded article in its “stretched position.” *Id.*



Accordingly, Tamm discloses “the webbed areas being biased to move toward the neutral position.”

d. Element 1[d]: “a plurality of tubular structures that are adjacent to the webbed areas, the tubular structures including a plurality of courses”

Tamm discloses “a plurality of tubular structures that are adjacent to the webbed areas, the tubular structures including a plurality of courses,” as required by claim element 1[d] of the ’046 Patent.

As discussed above in § IV.B, a “tubular structure” is a “tube shaped structure.” Tamm discloses a comparatively inelastic “second partial area” that corresponds with the “plurality of tubular structures,” Ex. 1003 at ¶ 11. Specific

embodiments of “second partial areas” are elements 92a, 92b, 92c, 92d, and 92e of Figure 9 and element 122 of Figure 12, which are reproduced below. *See id.* at ¶¶ 191–206, 221; Ex. 1005 at ¶¶ 77–82.

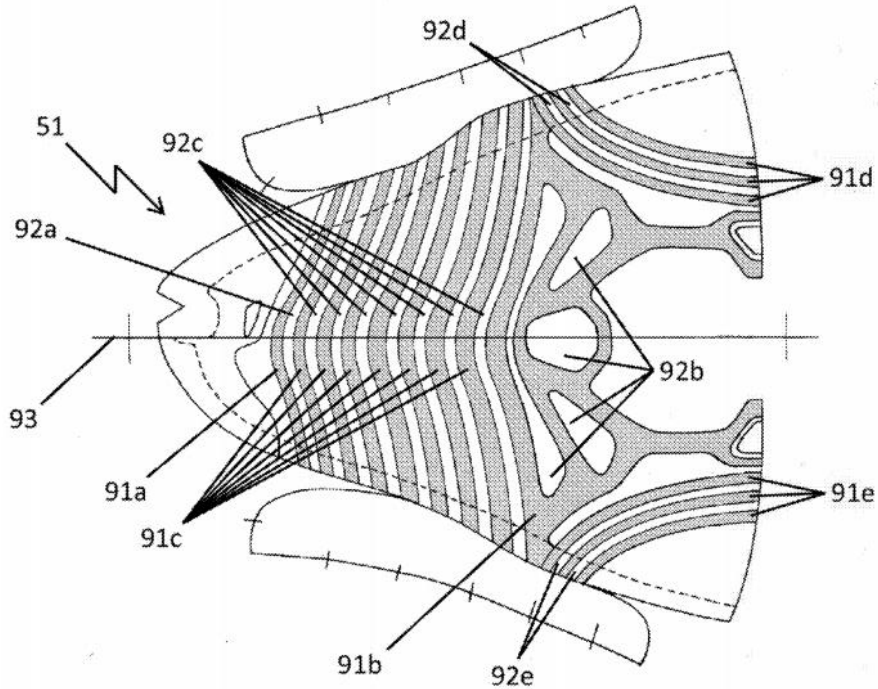
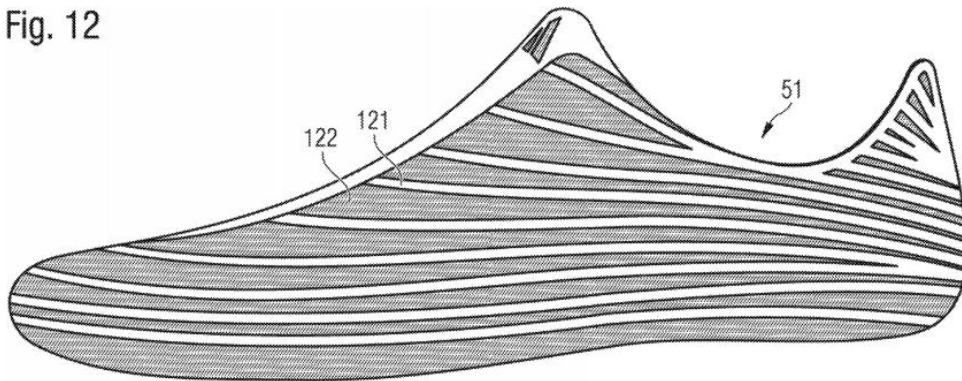


Fig. 9

Fig. 12



The plurality of second partial areas of Tamm are tube shaped structures because Tamm discloses that they “may include pockets or tunnels, in which two textile layers or knitwear weft-knitted or warp-knitted on two rows of needles are

connected to each other only in certain areas so that a hollow space is created.”

Ex. 1003 at ¶ 100. These pockets or tunnels are tubes that “may also be filled with a filler thread or a spacer knitwear.” *Id.* “It is furthermore possible for threads to be pulled through [the] tunnels” or for “stiffer reinforcing elements, such as caps, flaps or bones to be inserted.” *Id.*

Additionally, as can be seen in Figures 9 and 12, the second partial areas (*i.e.*, the plurality of tubular structures) of Tamm are adjacent to the first partial areas (elements 91a, 92b, 92c, 92d, 92e and 122, *i.e.*, the plurality of webbed areas). Further, Tamm discloses that the first and second partial areas “may run substantially parallel to one another,” *id.* at ¶¶ 13, 50. This enables “both partial areas ... to interact in an optimum manner and exerted forces may be directly transmitted between the two partial areas.” *Id.* at 43.

Finally, as with the first partial areas that correspond to the plurality of webbed areas, the second partial areas include a plurality of courses — *i.e.*, rows of loops made of a single length of yarn or other knit material, *see* § IV.C *supra*. Tamm describes that the second partial area “may be effected on a weft-knitting or warp-knitting machine,” *id.* at ¶ 44, and in connection with Figure 8 (reproduced below) depicts the plurality of courses formed of a first yarn that can form the first partial area made of “a weft-knitted fabric,” *id.* at ¶ 174 (“FIG. 8 depicts a weft-knitted fabric having a weft-knitted layer made from a first yarn”); *see also*

Ex. 1001 at 6:14–16 (describing that “any suitable knitting process may be used to produce knitted component 100 formed of unitary knit construction, including, but not limited to a warp knitting or a weft knitting process”).

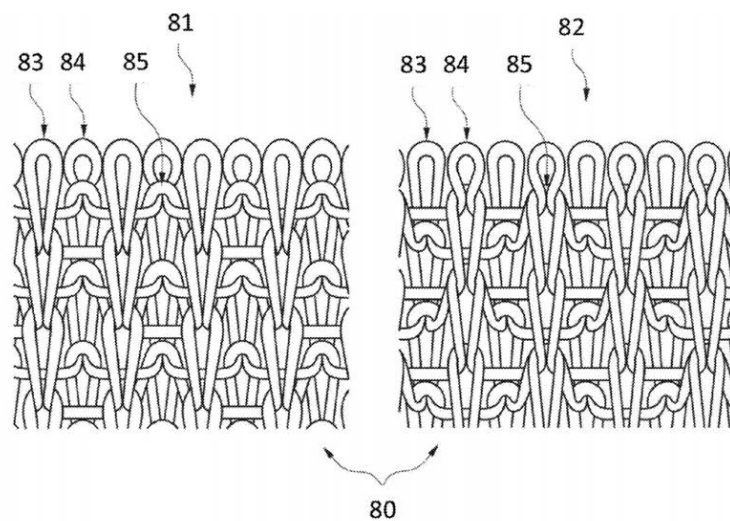


Fig. 8

As shown in Figure 8, the second partial area of Tamm includes a plurality of courses that are rows of loops made of a single length of yard or other knit material.” In particular, Tamm describes that the knitwear of Figure 8 includes “a first weft-knitted layer 83 made from a first yarn.” Ex. 1003 at ¶ 175. Multiple courses made from the first yarn are depicted in Figure 8. *Id.* at Fig. 8.

Accordingly, Tamm discloses “a plurality of tubular structures that are adjacent to the webbed areas, the tubular structures including a plurality of courses.” *See* Ex. 1005 at ¶¶ 77–82.

- e. **Element 1[e]: “wherein at least one of the webbed areas or tubular structures is configured to stretch to move the webbed areas to the extended position in response to a force applied to the article”**

Tamm discloses “wherein at least one of the webbed areas or tubular structures is configured to stretch to move the webbed areas to the extended position in response to a force applied to the article,” as required by claim element 1[e] of the ’046 Patent.

As discussed in § VI.B.1.i.b above, Tamm discloses that its first partial areas (*i.e.*, its webbed areas) can be “stretched” so as to move from a neutral position to an extended position when a force is applied to the article. The second partial areas (*i.e.*, the tubular structures) can also be stretched to move the webbed areas from a neutral position to an extended position when a force is applied to the article.

Ex. 1005 at ¶¶ 83–87. In particular, Tamm discloses that “[t]he first partial area and the second partial areas may be arranged such that during wearing of the shoe the first partial area is stretched more than the second partial area.” Ex. 1003 at ¶ 47. “Due to this arrangement, the upper yields in the areas in which it is subject to particularly great stretching during wear.” *Id.* Thus, both the first and second partial areas are configured to stretch at least in response to a force or load applied from the interior by a wearer’s foot (although the first partial areas stretch more.

Furthermore, Figure 11 of Tamm (reproduced below) shows specific areas of an article of footwear that may be configured to stretch to an extended position

in response to a force, and explains that second partial areas (*i.e.*, the tubular structures) may be used in low-expansion areas, whereas a first partial area may be used in high-expansion areas. *Id.* at Fig. 11, ¶¶ 218–20 (“[T]he second partial area, which comprises the second, less elastic yarn, may be arranged where no great expansion of the surface [T]he first partial area with the more elastic first yarn should be arranged in the zones in which greater expansion of the foot are to be expected.”).

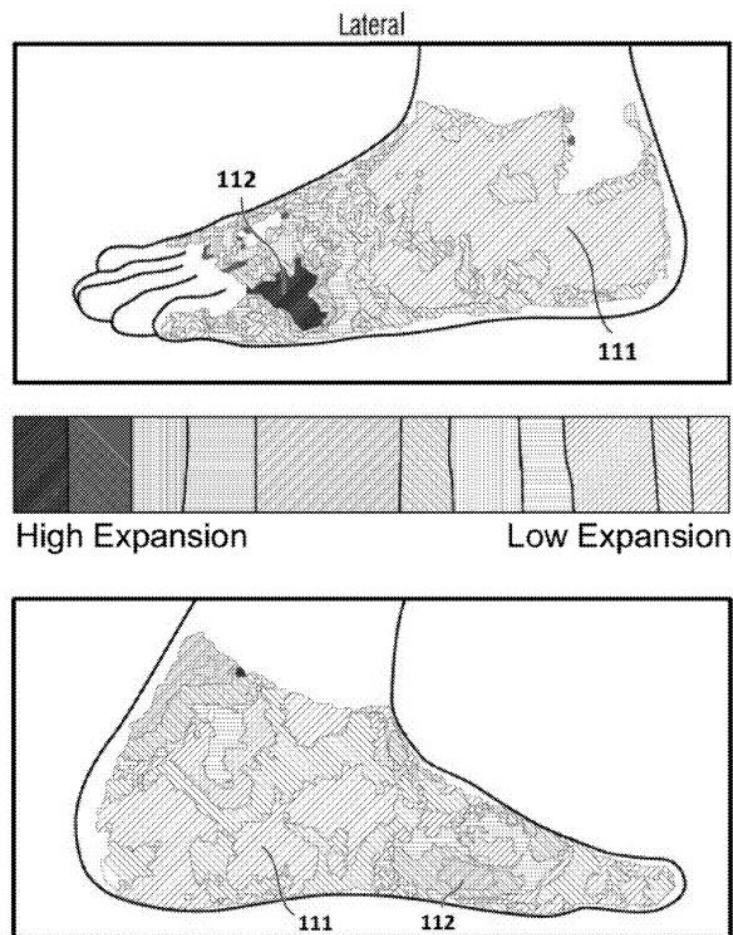


Fig. 11

Additionally, Tamm explains that both the first and second partial areas are made of yarns with Young's moduli — a measure of elasticity — that allows them to stretch elastically. In particular, Tamm explains that the first partial areas may have a Young's modulus of 0.6MPa and the second partial area may have a Young's modulus of 1.88 MPa. Ex. 1003 at ¶¶ 46–47.

Due to the arrangement of the elastic first and second areas, Tamm discloses that “the upper yields in the areas in which it is subject to particularly great stretching during wear,” *id.* at ¶ 47, which “supports the movement of the feet” by enabling its “first partial area 91a [to] undergo[] greater stretching than the second partial area 92a during walking or running.” *Id.* at ¶ 196. Based on this disclosure from Tamm, a person of ordinary skill in the art would understand that both the first and second partial areas of Tamm are configured to stretch to move the webbed areas to the extended position in response to a force applied to the article. Ex. 1005 at ¶¶ 83–87.

Accordingly, Tamm discloses “wherein at least one of the webbed areas or tubular structures is configured to stretch to move the webbed areas to the extended position in response to a force applied to the article.” *See id.*

- f. **Element 1[f]: “wherein in the neutral position, a first area of the front surface is hidden from visual observation from a first viewing perspective”**

Tamm discloses “wherein in the neutral position, a first area of the front surface is hidden from visual observation from a first viewing perspective” as required by claim element 1[f] of the '046 Patent. *See* Ex. 1005 at ¶¶ 88–91.

Figures 9 and 12 of Tamm (reproduced below) show first partial areas and second partial areas arranged in alternating rows (*i.e.*, in Figure 9 first partial areas 91a and 91c alternate with second partial areas 92a and 92c, first partial areas 91d alternate with second partial areas 92d, and first partial areas 91e alternate with second partial areas 92e, and in Figure 12 first partial areas 121 alternate with second partial areas 122).

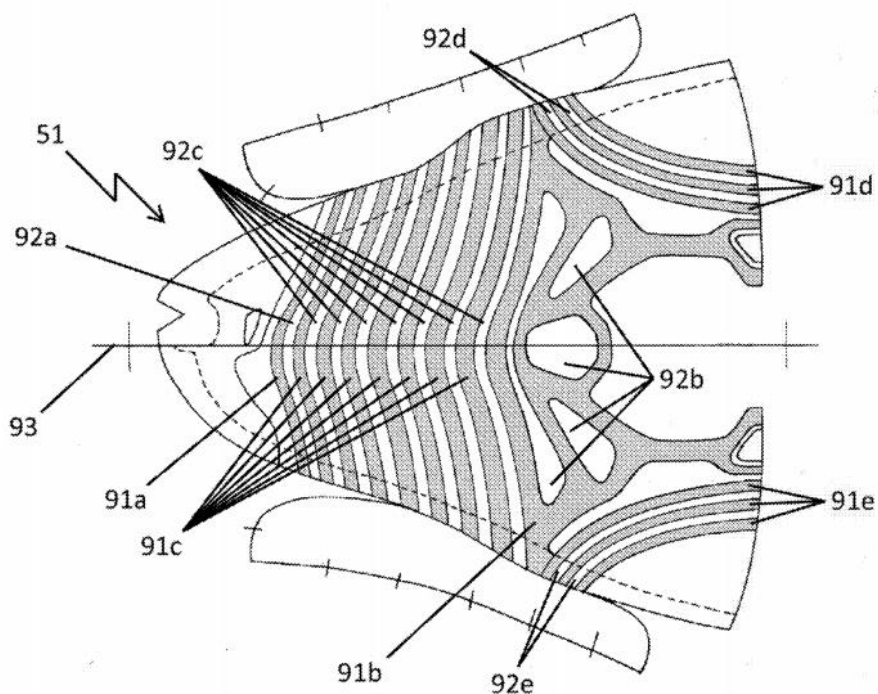
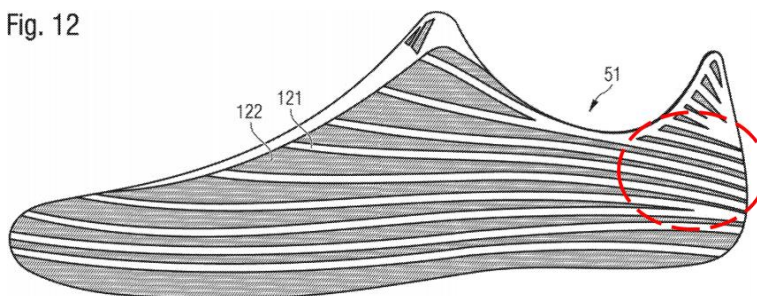


Fig. 9

Fig. 12



As discussed above in § VI.B.1.i.d, the second partial areas “may include pockets or tunnels.” Ex. 1003 at ¶ 100. These pockets or tunnels can be filled with other material, such as “filler thread,” “spacer knitwear,” or “reinforcing elements, such as caps, flaps or bones.” *Id.* Moreover, Tamm discloses that the second partial areas can be constructed of “three-dimensional knitwear” that “may be combined with structural variations and/or variations of the number of stitches in the direction of the course” such that “contours, structures, knobs, curvatures, notches, openings, fasteners, loops and pockets may be integrated into the knitwear.” *Id.* at ¶¶ 87–89. Based on this, a person of ordinary skill in the art would understand that Tamm discloses that its second partial areas are raised above the front surface of its first partial areas due to the second partial areas being formed as pockets or tunnels. Ex. 1005 at ¶¶ 88–91. A person of ordinary skill in the art would further appreciate that some tube shapes (*e.g.*: Ω) form an undercut when affixed to a surface, such that they necessarily hide a portion of the surface where the two structures are in close proximity. *Id.* These opaque knitwear structures must at least

partially obscure a front surface from some viewing angles in the absence of an applied force. *Id.*

Because the second partial areas are raised above the front surface of the first partial areas, when the first partial areas are in their unstretched (*i.e.*, neutral position), the second partial areas are closer together than when the first partial areas are stretched apart to the extended positions. *See* Ex. 1003 at Figs. 9, 12; Ex. 1005 at ¶¶ 88–91. Thus, when viewed from certain first viewing angles — namely, first viewing angles that are close to the viewing surface and looking perpendicular to the parallel alternating first and second partial areas — portions of the front surface of the first partial area will be blocked from view by the higher second partial areas. *Id.* This can be illustrated, for example in the heel region of the embodiment of Figure 12 of Tamm (circled in the reproduction of the figure above) where the first partial area is at its narrowest. *Id.* When viewed along a perspective such as that illustrated by the added arrow, the second partial areas would block from view portions of the first partial areas. *Id.*

This accords with how Patent Owner is alleging that this limitation is met by the accused products in the District Court Action. There, Patent Owner accused Petitioner’s IGNITE Speed NetFit shoe of infringing the Challenged Claims. Ex. 1004 at 124. As shown in the excerpts from Patent Owner’s Infringement Contentions below, Patent Owner identified an area of the upper of the shoe that

includes alternating rows with different textures as satisfying the “plurality of webbed areas” and “plurality of tubular structures” limitations of the Challenged Claims. *Id.*

a plurality of **webbed areas** that include a plurality of courses formed from a first yarn, the **webbed areas** having a **front surface**, the webbed areas configured to move between a neutral position and an extended position, the webbed areas being biased to move toward the neutral position; and



a plurality of **tubular structures** that are adjacent to the **webbed areas**, the tubular structures including a plurality of courses;



The areas identified by Patent Owner as the tubular structures were raised above the front surface of the areas identified as the webbed areas. Thus, as shown in the excerpt below, Patent Owner contended that when the webbed areas were in an unstretched, neutral position, the tubular structures hid from view portions of the front surface of the webbed areas. *Id.* at 125.

wherein in the neutral position, a first area of the **front surface** is hidden from visual observation from a first viewing perspective, and



This is precisely how the raised second partial areas of Tamm hide from view portions of the front surface of the first partial areas when the first partial areas are in an unstretched position. Ex. 1005 at ¶¶ 88–91.

Accordingly, Tamm discloses “wherein in the neutral position, a first area of the front surface is hidden from visual observation from a first viewing perspective.”

g. Element 1[g]: “wherein in the extended position, the first area of the front surface is revealed for visual observation from the first viewing perspective”

Tamm discloses “wherein in the extended position, the first area of the front surface is revealed for visual observation from the first viewing perspective” as required by claim element 1[g] of the ’046 Patent. Ex. 1005 at ¶¶ 92–95.

Because the second partial areas are raised above the front surface of the first partial areas, *see* § VI.B.1.i.f *supra*; Ex. 1003 at Figs. 9, 12, ¶¶ 87–89, 100; Ex. 1005 at ¶¶ 92–95, when the first partial areas are in the stretched (*i.e.*, extended) position), the second partial areas are further apart than when the first partial areas are in their unstretched, neutral position. Ex. 1005 at ¶¶ 92–95. Thus, when viewed from the same first viewing angles as discussed in § VI.B.1.i.f above, portions of the front surface of the first partial area that were blocked from view by the protruding second partial areas when in the neutral position will become visible. *Id.*

As discussed above, Tamm discloses that a first partial area may be hidden in a neutral position, and that said first partial area may elastically assume an extended position. Tamm further explains that opaque tube-shaped structures may be used to achieve certain coloring effects, necessarily blocking parts of the front surface from visual observation. Ex. 1003 at ¶ 113; *see also id.* at ¶¶ 131–59. One of ordinary skill in the art understands an elastic material may assume its extended position in response to load, and that the area of a front surface obscured by the tube-shaped second partial area must change as a result. Ex. 1005 at ¶¶ 92–95.

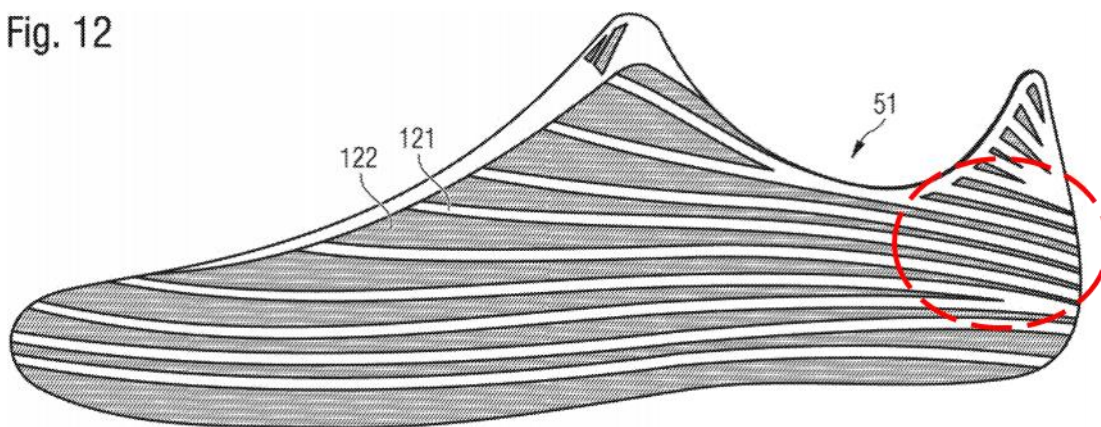
This also accords with how Patent Owner is alleging that this limitation is met by the accused products in the District Court Action. There, as shown in the excerpt from Patent Owner’s Infringement Contentions below, Patent Owner contends that when the portions of the accused shoe identified as webbed areas are stretched to an extended position, the portions identified as the tubular structures no longer hide from view portions of the front surface of the webbed areas. Ex. 1004 at 124.

wherein in the extended position, the first area of the front surface is revealed for visual observation from the first viewing perspective.



This is exactly how the raised second partial areas of Tamm reveal previously obscured portions of the front surface of the first partial areas (*i.e.*, the knit base between tubular structures) when the first partial areas are in a stretched position.

Fig. 12



Accordingly, the first area of the front surface being revealed for visual observation from the first viewing perspective where in the extended position is disclosed by Tamm.

Accordingly, Tamm discloses “wherein the extended position, the first area of the front surface is revealed for visual observation from the first viewing perspective.”

* * *

As shown above, Tamm discloses each of the limitations of claim 1 of the '046 Patent. Claim 1 is therefore anticipated by Tamm.

ii. Claim 2

- a. Element 2[a]: “The article of claim 1, wherein the article is associated with a longitudinal direction and a lateral direction”**

Tamm discloses “wherein the article is associated with a longitudinal direction and a lateral direction,” as required by claim element 2[a] of the ’046 Patent. Ex. 1005 at ¶¶ 97–100.

In connection with a shoe, the direction running from the toe to the heel is commonly referred to as the longitudinal direction, and the direction running from side to side is commonly referred to as the lateral direction. *Id.* at ¶¶ 97–100; *see also* Ex. 1001 at Figs. 19–27, 24:37-39 (“In FIG. 19, there is greater stretch in lateral direction 104 than longitudinal direction 102.”), 25:25–27 (“[I]n the embodiment of FIG. 20, ribbed features, i.e., webbed areas and tubular rib structures, disposed in lower region 2020 are of longer length in longitudinal direction 102”). This can be seen by Patent Owner’s depiction of these directions in its Infringement Contentions (reproduced below). Ex. 1004 at 127.

2. The article of claim 1, wherein the article is associated with a longitudinal direction and a lateral direction;



Tamm discloses that its shoe upper is associated with “a longitudinal axis of the upper.” Ex. 1003 at ¶¶ 13, 15, 23, 51, 55 ; *see also id.* at Figs. 9 and 12. The direction perpendicular to this is “the lateral direction.” Ex. 1005 at 76. This is depicted in Figure 9 of Tamm (reproduced below), where “[t]he longitudinal axis 93 of the upper 51 is ... shown.” Ex. 1003 at ¶ 197.

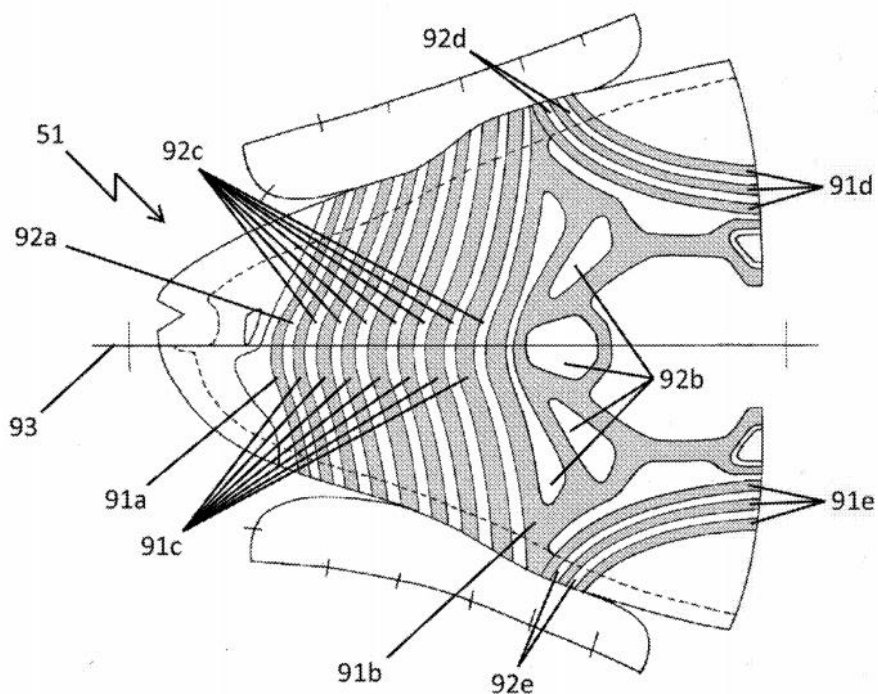


Fig. 9

Moreover, a person of ordinary skill in the art would understand that the shoe upper of Tamm is necessarily associated with a longitudinal direction running along the axis from the toe to the heel of the shoe and lateral direction running along the side-to-side axis of the shoe. Ex. 1005 at ¶¶ 97–100.

Accordingly, Tamm discloses “wherein the article is associated with a longitudinal direction and a lateral direction.” *Id.*

b. Element 2[b]: “wherein the plurality of webbed areas and the plurality of tubular structures extend along the longitudinal direction”

Tamm discloses “wherein the plurality of webbed areas and the plurality of tubular structures extend along the longitudinal direction,” as required by claim element 2[b] of the '046 Patent. *See* Ex. 1005 at ¶¶ 101–04.

As shown in Figure 9 (reproduced below), the first and second partial areas of Tamm extend along the longitudinal direction.

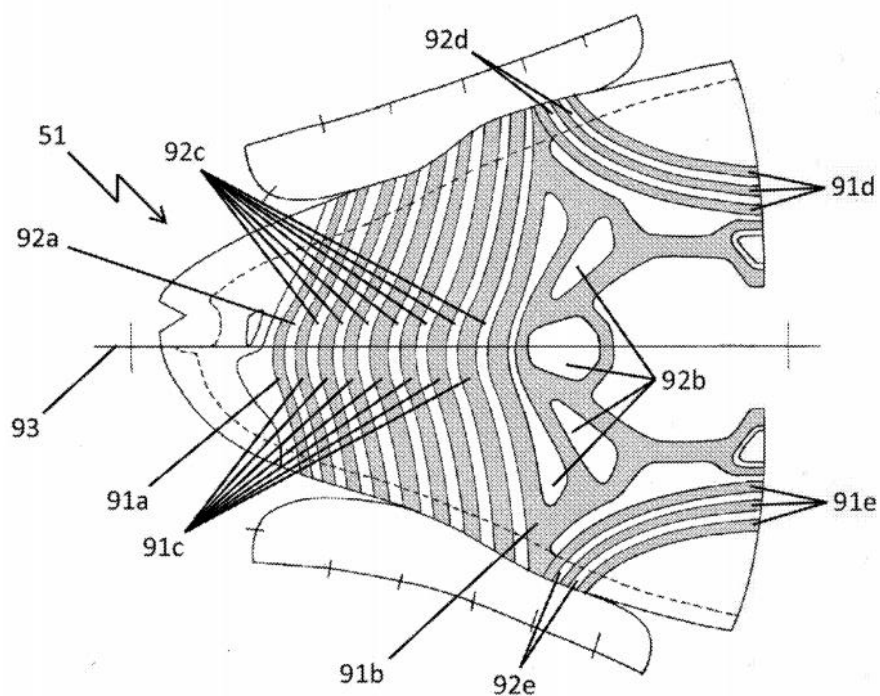


Fig. 9

Tamm teaches that in this figure, “[i]n the proximity of longitudinal axis 93, the first partial area 91a and the second partial area 92a run substantially orthogonal to the former, i.e. they cross the longitudinal axis 93 approximately at a right angle.” Ex. 1003 at ¶ 197.” Towards the lateral and medial side, the angle

between the first partial area 91a and the longitudinal axis 93 changes.” *Id.* “It deviates from the right angle.” *Id.* “The same applies to the second partial area.” *Id.* Thus, along the sides of the shoe where the first and second partial areas “deviate[] from the right angle,” the areas extend at least partially along the longitudinal direction. Ex. 1005 at ¶¶ 101–104.

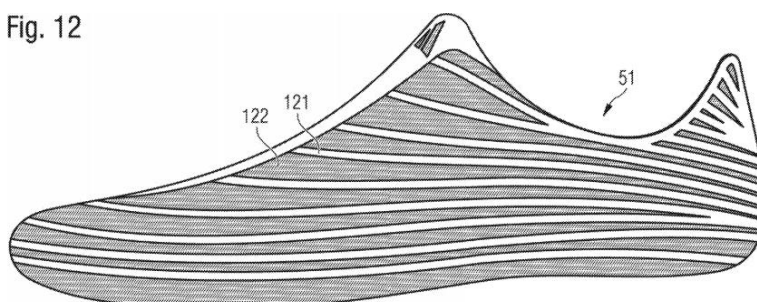
This is exactly the same as how Patent Owner reads this limitation on Petitioner’s accused shoe in the District Court Action. There, as shown in the excerpt from Patent Owner’s Infringement Contentions reproduced below, Patent Owner contends that the areas that it identifies as the webbed areas and tubular structures extend along the longitudinal axis when they are at an angle along the side of the shoe. Ex. 1004 at 127.

wherein the plurality of webbed areas and the plurality of tubular structures extend along the longitudinal direction;



Additionally, the embodiment of Tamm shown in Figure 12 (reproduced below) also shows its first and second partial areas extending along the longitudinal axis (*i.e.*, from the toe to the heel of the shoe). Ex. 1005 at ¶¶ 101–04.

Fig. 12



Specifically, Tamm describes that “FIG. 12 shows an upper 51 ... in which the first partial area and the second partial area ... run above the instep like a ribbon, around the heel and on the inside of the foot ... back to the forefoot area.”

Ex. 1003 at ¶ 221.

Accordingly, Tamm discloses an article wherein the plurality of webbed areas and the plurality of tubular structures extend along the longitudinal direction.

c. Element 2[c]: “wherein the plurality of webbed areas and the plurality of tubular structures are spaced apart in the lateral direction”

Tamm discloses “wherein the plurality of webbed areas and the plurality of tubular structures are spaced apart in the lateral direction,” as required by claim element 2[c] of the ’046 patent. *See* Ex. 1005 at ¶¶ 105–08.

As shown in Figure 9 (reproduced below), the first and second partial areas of Tamm are spaced apart in the lateral direction. *Id.*; Ex. 1003 at ¶¶ 197–98.

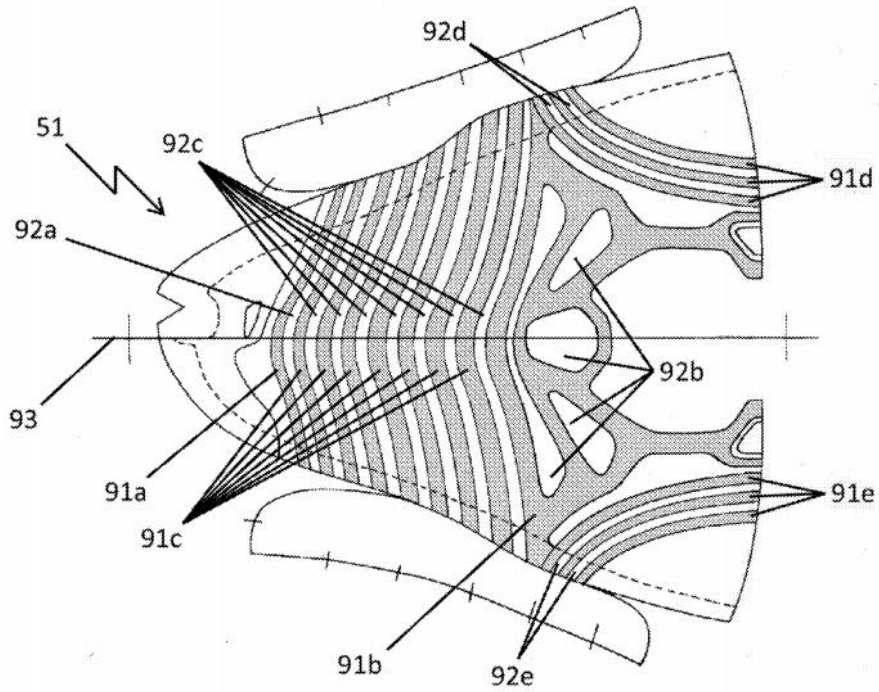
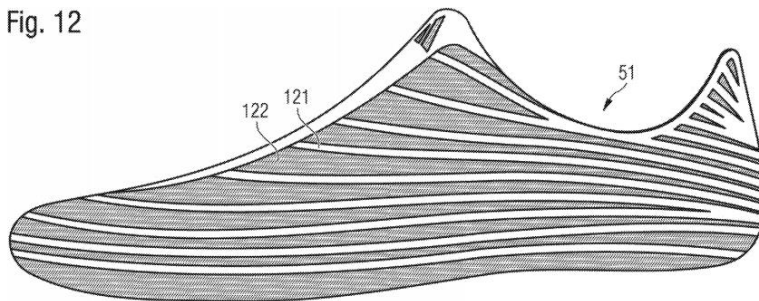


Fig. 9

In particular, first partial areas 91d and 91e are spaced apart from second partial areas 92d and 92e, respectively, in the lateral direction at the rear of the shoe. *Id.* Additionally, in the embodiment of Figure 12 (reproduced below), the first and second partial areas 121 and 122 are spaced apart in the lateral direction at along the side and in the front section of the shoe. Ex. 1003 at ¶¶ 197–98, 221; Ex. 1005 at ¶¶ 105–08.

Fig. 12



Accordingly, Tamm discloses “wherein the plurality of webbed areas and the plurality of tubular structures extend along the longitudinal direction.”

d. Element 2[d]: “wherein the article is configured to stretch in the lateral direction between the neutral position and the stretched position, the article biased toward the neutral position”

Tamm discloses “wherein the article is configured to stretch in the lateral direction between the neutral position and the stretched position¹, the article biased toward the neutral position,” as required by claim element 2[d] of the ’046 Patent. *See* Ex. 1005 at ¶¶ 109–11.

Tamm discloses that its first partial areas are more elastic than its second partial areas. Ex. 1003 at ¶ 46. Thus, “during wearing of the shoe the first partial area is stretched more than the second partial area.” *Id.* at ¶ 47. As discussed above in § VI.B.1.i.b, this stretching causes the article to stretch between a neutral position and an extended, stretched position. Ex. 1005 at ¶¶ 109–11. As discussed in § VI.B.1.i.c, the article is biased toward the neutral position. *Id.*

Tamm further explains that, “[i]n some embodiments, the first partial area and the second partial area run substantially parallel, which, “due to the elastic

¹ While there is no direct prior reference to “stretched position” in the claims, it is clear that this is intended to refer back to the “extended position” first recited in claim element 1[b]. *See* § IV.D.

yarn, the first partial area ensures that the upper adjusts itself to the shape of the foot, the second partial area, due to its less elastic yarn, causes an optimum force transmission of the foot and thus prevents or reduces shifting of the foot relative to a sole.” Ex. 1003 at ¶ 50. Thus, a person of ordinary skill in the art would understand that the stretching of the embodiments of the Tamm shown in Figures 9 and 12 would include stretching in the lateral direction. Ex. 1005 at ¶¶ 109–11.

Accordingly, Tamm discloses “wherein the article is configured to stretch in the lateral direction between the neutral position and stretched position, the article biased toward the neutral position.”

* * *

As shown above, Tamm discloses each of the limitations of claim 2 of the ’046 Patent. Claim 2 is therefore anticipated by Tamm.

- iii. **Claim 17: “The article of claim 1, wherein the article includes a knitted component, the knitted component comprising the plurality of webbed areas and the plurality of tubular structures.”**

Tamm discloses “wherein the article includes a knitted component, the knitted component comprising the plurality of webbed areas and the plurality of tubular structures.” *See* Ex. 1005 at ¶¶ 113–15.

As shown in § VI.B.1.i.a, Tamm discloses a shoe upper that includes a plurality of partial areas, which are the “first partial areas of Tamm.” As shown in § VI.B.1.i.d, Tamm discloses that the shoe upper includes a plurality of tubular

structures, which are the “second partial areas of Tamm.” Tamm discloses these first and second partial areas are part of a knitted component. In particular, Tamm discloses that “[t]he shoe upper comprises a second partial area 92a, which is manufactured as one-piece knitwear with a first partial area 91a.” Ex. 1003 at ¶ 191. Tamm further explains that either or both partial areas may be made through a number of knitting techniques, including, for example, weft-knitting, warp-knitting, or weft-warping. *Id.* at ¶¶ 12, 49. Tamm additionally discloses a number of yarns and fibers that may be used in either or both areas. *Id.* at ¶¶ 131–58.

Accordingly, claim 17 is anticipated by Tamm.

iv. Claim 18: “The article of claim 17, wherein the knitted component is formed of unitary knit construction.”

Tamm further “wherein the knitted component is formed of unitary knit construction.” *See* Ex. 1005 at ¶¶ 116–18.

Tamm discloses that a shoe upper including a plurality of first and second partial areas may be “manufactured as one-piece knitwear.” *Id.* at ¶ 191. Moreover, Tamm explains that the same yarn may be used to make multiple connected layers of fabric and/or three-dimensional knit structures corresponding with a first and/or second partial area. *Id.* at ¶¶ 95–96. Tamm further explains that “Since the first and the second partial areas are formed as one-piece knitwear, both partial areas are able to interact in an optimum manner and exerted forces may be directly transmitted between the two partial areas. Since seams are furthermore done

without, they may neither tear nor be perceived as irritating by the wearer of the shoe. Moreover, the upper is easy and cost-effective to produce, since separately cutting the first and the second partial areas to size and subsequently assembling them may be done without.” *Id.* at ¶ 43.

Accordingly, claim 18 is anticipated by Tamm.

2. Ground 2: The Challenged Claims Are Obvious Based on Tamm in View of the Knowledge of a Person of Ordinary Skill in the Art

As shown below, Tamm in view of the knowledge of a person of ordinary skill in the art renders obvious each of the elements of the Challenged Claims.

i. Independent Claim 1

a. Element 1[a]: “An article comprising: a plurality of webbed areas that include a plurality of courses formed from a first yarn, the webbed areas having a front surface”

Tamm discloses “[a]n article comprising[] a plurality of webbed areas that include a plurality of courses formed from a first yarn, the webbed areas having a front surface.” *See* § VI.B.1.i.a *supra*. *See* Ex. 1005 at ¶ 120.

b. Element 1[b]: “the webbed areas configured to move between a neutral position and an extended position”

Tamm discloses “the webbed areas configured to move between a neutral position and an extended position.” *See* § VI.B.1.i.b *supra*; Ex. 1005 at ¶ 121.

c. Element 1[c]: “the webbed areas being biased to move toward the neutral position”

Tamm discloses “the webbed areas being biased to move toward the neutral position.” *See* § VI.B.1.i.c *supra*; Ex. 1005 at ¶ 122.

d. Element 1[d]: “a plurality of tubular structures that are adjacent to the webbed areas, the tubular structures including a plurality of courses”

Tamm discloses “a plurality of tubular structures that are adjacent to the webbed areas, the tubular structures including a plurality of courses.” *See* § VI.B.1.i.d *supra*; Ex. 1005 at ¶ 123.

e. Element 1[e] “wherein at least one of the webbed areas or tubular structures is configured to stretch to move the webbed areas to the extended position in response to a force applied to the article”

Tamm discloses “wherein at least one of the webbed areas or tubular structures is configured to stretch to move the webbed areas to the extended position in response to a force applied to the article.” *See* § VI.B.1.i.e *supra*; Ex. 1005 at ¶ 124.

f. Element 1[f]: “wherein in the neutral position, a first area of the front surface is hidden from visual observation from a first viewing perspective”

Claim element 1[f] of the '046 Patent, which requires “wherein in the neutral position, a first area of the front surface is hidden from visual observation from a first viewing perspective,” is obvious in view of Tamm, *see* § VI.B.1.i.f *supra*, and

the knowledge of a person of ordinary skill in the art. A person of ordinary skill in the art would have been motivated to use the teachings of Tamm along with their own knowledge to yield the predictable result of a shoe upper as that taught by Tamm wherein in the neutral position, a first area of the front surface is hidden from visual observation from a first viewing perspective. *See* Ex. 1005 at ¶¶ 125–33.

Figures 9 and 12 of Tamm (reproduced below) show first partial areas and second partial areas arranged in alternating rows (*i.e.*, in Figure 9 first partial areas 91a and 91c alternate with second partial areas 92a and 92c, first partial areas 91d alternate with second partial areas 92d, and first partial areas 91e alternate with second partial areas 92e, and in Figure 12 first partial areas 121 alternate with second partial areas 122). *Id.*

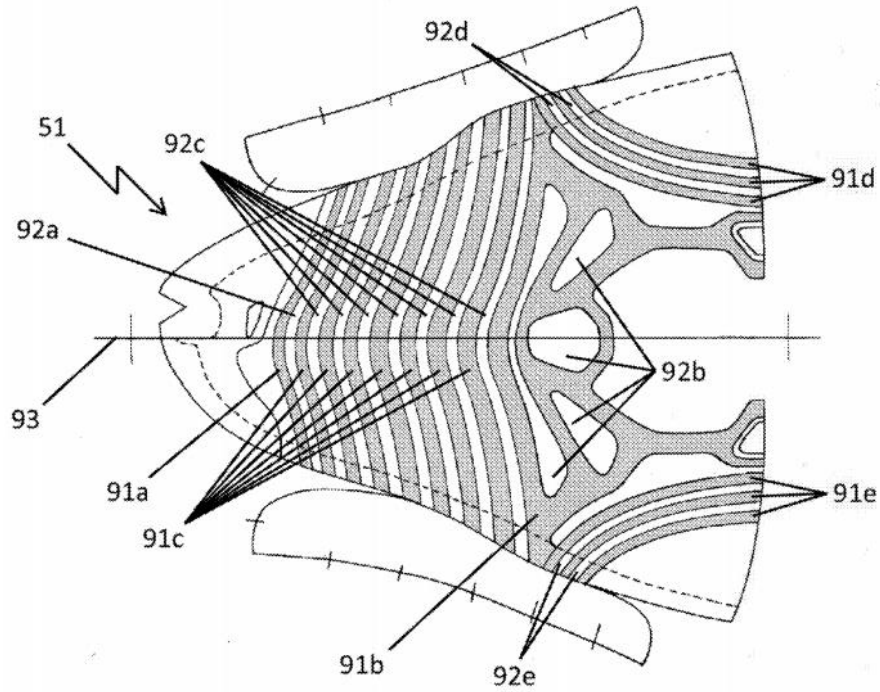


Fig. 9

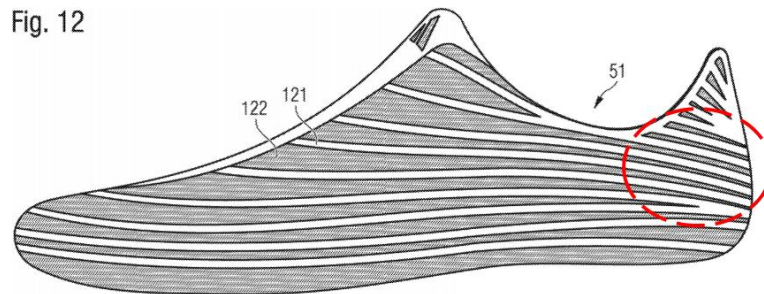


Fig. 12

As discussed above in § VI.B.1.i.d, the second partial areas “may include pockets or tunnels.” Ex. 1003 at ¶ 100. These pockets or tunnels can be filled with other material, such as “filler thread,” “spacer knitwear,” or “reinforcing elements, such as caps, flaps or bones.” *Id.* Tamm discloses that the second partial areas can be constructed of “three-dimensional knitwear” that “may be combined with structural variations and/or variations of the number of stitches in the direction of

the course” such that “contours, structures, knobs, curvatures, notches, openings, fasteners, loops and pockets may be integrated into the knitwear.” *Id.* at ¶¶ 87–89.

A person of ordinary skill in the art would have been motivated to use these teachings of Tamm along with their own knowledge to create an article such as a shoe upper with webbed areas (the first partial areas of Tamm) and tubular structures (the second partial areas of Tamm) where the surfaces of the tubular structures are raised above the front surface of the webbed areas. Ex. 1005 at ¶¶ 125–33. A person of ordinary skill in the art would have known based on Tamm and their own knowledge that the pockets or tunnels of the second partial area of Tamm could be used to create second partial areas with a surface higher than the front surface of the first partial surfaces. *Id.* at ¶¶ 125–33.

In this configuration, when the first partial areas are in their unstretched (*i.e.*, neutral position), the second partial areas would be closer together than when the first partial areas are stretched apart to the extended positions. *Id.* Thus, when viewed from certain first viewing angles — namely, first viewing angles that are close to the viewing surface and looking perpendicular to the parallel alternating first and second partial areas — portions of the front surface of the first partial area will be blocked from view by the raised second partial areas. *Id.* This can be illustrated, for example in the heel region of the embodiment of Figure 12 of Tamm (circled in the reproduction of the figure above) where the first partial area

is at its narrowest. *Id.* When viewed along a perspective such as that illustrated by the added arrow, the second partial areas would block from view portions of the first partial areas. *Id.*; *see* Ex. 1005 at ¶¶ 125–33. This accords with how Patent Owner is alleging that this limitation is met by the accused products in the District Court Action. *See* § VI.B.1.i.f.

Tamm further provides motivation to a person of ordinary skill in the art to construct an article such as a shoe upper according to the teachings of Tamm and their own knowledge in such a manner that the tubular structures have a surface that is raised above the front surface of the webbed areas such that when the webbed areas are unstretched portions of the webbed areas are blocked from view by the raised surfaces of the tubular structures. For example, Tamm discloses that it can be desirable to create a shoe upper with visual effects such as by constructing a shoe upper where “in certain areas only one yarn appears on the visible side of the product and the respective other yarn runs invisibly on the other side of the product.” Ex. 1003 at ¶ 113; *see also id.* at ¶¶ 131–58. A person of ordinary skill in the art would understand that a similar visual effect could be achieved through the use of opaque tube-shaped knitwear to blocking sight-lines in the manner described above. Ex. 1005 at ¶¶ 125–33.

A person of ordinary skill in the art would be highly motivated to design an article with such a visual effect in order to generate visual appeal while minimizing

manufacturing costs. Ex. 1005 at ¶¶ 125–33. Including a unique visual feature by assigning specific areas of color to partial areas is very attractive as it incorporates an additional aesthetic feature with no additional process, no additional labor and therefore little or no cost implication. *Id.* Persons of ordinary skill in the art are aggressively seeking ways to increase visual interest and reduce cost. *Id.* The combination of both in one feature would be very attractive and therefore aggressively pursued. *Id.* The teachings of Tamm would immediately be used to display aesthetic options including, but not limited to, stretching to reveal previously hidden color. *Id.*

Tamm further would have motivated a person of ordinary skill in the art to design an article with such a visual effect because doing so in the manner described above would minimize waste and ease recyclability. For example, Tamm describes that its “weft-knitted part could be directed to compostable waste, whereas the insole could be directed to recycling of reusable materials.” Ex. 1003 at ¶ 127. A person of ordinary skill in the art would recognize that by creating the visual effect from first and second partial areas that are part of a single knit material, waste material could be minimized. Ex. 1005 at ¶¶ 125–33; *see also* Ex. 1001 at 2:6–10 (“By decreasing the number of material elements used in the upper, therefore, waste may be decreased while increasing the manufacturing efficiency and recyclability of the upper.”).

Accordingly, a person of ordinary skill in the art would have found it obvious use the teachings of Tamm and their own knowledge to create an article such as a shoe upper with webbed areas and tubular structures “wherein in the extended position, the first area of the front surface [of the webbed areas] is revealed for visual observation from the first viewing perspective” in order to create a desirable visual effect while minimizing waste. Ex. 1005 at ¶¶ 125–33.

g. Element 1[g]: “wherein in the extended position, the first area of the front surface is revealed for visual observation from the first viewing perspective”

Claim element 1[g] of the '046 Patent, which requires “wherein in the extended position, the first area of the front surface is revealed for visual observation from the first viewing perspective,” is obvious in view of Tamm, *see* § VI.B.1.i.g *supra*, and the knowledge of a person of ordinary skill in the art. A person of ordinary skill in the art would have been motivated to use the teachings of Tamm along with their knowledge to yield the predictable result of a shoe upper as taught by Tamm wherein in the extended position, the first area of the front surface is revealed for visual observation from the first viewing perspective. *See* Ex. 1005 at ¶¶ 134–40.

As described above in § VI.B.2.i.f, a person of ordinary skill in the art would have been motivated to use these teachings of Tamm along with their own knowledge to create an article such as a shoe upper with webbed areas (the first

partial areas of Tamm) and tubular structures (the second partial areas of Tamm) where the surfaces of the tubular structures are raised above the front surface of the webbed areas. *Id.*

In this configuration, because the second partial areas are raised above the front surface of the first partial areas, *see* § VI.B.1.i.f *supra*; Ex. 1003 at Figs. 9, 12, ¶¶ 87–89, 100; Ex. 1005 at ¶¶ 134–40, when the first partial areas are in the stretched (*i.e.*, extended) position), the second partial areas are further apart than when the first partial areas are in their unstretched, neutral position. Ex. 1005 at ¶¶ 134–40. Thus, when viewed from the same first viewing angles as discussed in § VI.B.1.i.f above, the portions of the front surface of the first partial area that were blocked from view by the higher second partial areas when in the neutral position will become visible. *Id.* This accords with how Patent Owner is alleging that this limitation is met by the accused products in the District Court Action. *See* § VI.B.1.i.g *supra*.

As described in § VI.B.2.i.f above, Tamm provides motivation to a person of ordinary skill in the art to construct such an article according to the teachings of Tamm and their own knowledge in such a manner that the tubular structures have a surface that is raised above the front surface of the webbed areas such that when the webbed areas are unstretched portions of the webbed areas are blocked from view by the raised surfaces of the tubular structures in order to create a desirable

visual effect. *Id.* A person of ordinary skill in the art would understand that a similar visual effect could be achieved through the use of opaque, tube-shaped knitwear that reveals certain sight lines that were previous hidden when the tubular structures are spread further apart when the webbed areas are stretched to an extended position. *Id.*

As is also described in § VI.B.2.i.f above, Tamm would have motivated a person of ordinary skill in the art to design an article with such a visual effect because doing so in the manner described above would minimize cost and waste while maximizing aesthetic options. *Id.*

Accordingly, a person of ordinary skill in the art would have found it obvious to use the teachings of Tamm and their own knowledge to create an article such as a shoe upper with webbed areas and tubular structures “wherein in the extended position, the first area of the front surface [of the webbed areas] is revealed for visual observation from the first viewing perspective.”

* * *

As shown above, each of the limitations of claim 1 of the '046 Patent is disclosed by Tamm or obvious in view of Tamm and the knowledge of a person of ordinary skill in the art. Claim 1 is therefore obvious.

ii. Claim 2

- a. Element 2[a]: “The article of claim 1, wherein the article is associated with a longitudinal direction and a lateral direction”**

Tamm discloses “wherein the article is associated with a longitudinal direction and a lateral direction.” *See* § VI.B.1.ii.a *supra*; Ex. 1005 at ¶ 142.

- b. Element 2[b]: “wherein the plurality of webbed areas and the plurality of tubular structures extend along the longitudinal direction”**

Tamm discloses “wherein the plurality of webbed areas and the plurality of tubular structures extend along the longitudinal direction.” *See* § VI.B.1.ii.b *supra*; Ex. 1005 at ¶ 143.

- c. Element 2[c]: “wherein the plurality of webbed areas and the plurality of tubular structures are spaced apart in the lateral direction”**

Tamm discloses “wherein the plurality of webbed areas and the plurality of tubular structures are spaced apart in the lateral direction.” *See* § VI.B.1.ii.c *supra*; Ex. 1005 at ¶ 144.

- d. Element 2[d]: “wherein the article is configured to stretch in the lateral direction between the neutral position and the stretched position, the article biased toward the neutral position”**

Tamm discloses “wherein the article is configured to stretch in the lateral direction between the neutral position and the stretched position, the article biased toward the neutral position.” *See* § VI.B.1.ii.d *supra*; Ex. 1005 at ¶ 146.

* * *

As shown above, each of the limitations of claim 2 of the '046 Patent is disclosed by Tam or obvious in view of Tamm and the knowledge of a person of ordinary skill in the art. Claim 2 is therefore obvious.

- iii. Claim 17: “The article of claim 1, wherein the article includes a knitted component, the knitted component comprising the plurality of webbed areas and the plurality of tubular structures.”**

Tamm discloses “wherein the article includes a knitted component, the knitted component comprising the plurality of webbed areas and the plurality of tubular structures.” *See* § VI.B.1.iii *supra*; Ex. 1005 at ¶ 147.

Accordingly, claim 17 is obvious.

- iv. Claim 18: “The article of claim 17, wherein the knitted component is formed of unitary knit construction.”**

Tamm discloses “wherein the knitted component is formed of unitary knit construction.” *See* § VI.B.1.iv *supra*; Ex. 1005 at ¶ 148.

Accordingly, claim 18 is obvious.

VII. MANDATORY NOTICES (37 C.F.R. § 42.8(A)(1))

A. Real Party-in-Interest (37 C.F.R. § 42.8(b)(1))

PUMA North America, Inc., PUMA Mostro GmbH, PUMA Suede Holdings, Inc., PUMA Sprint GmbH, and PUMA SE are the real parties-in-interest.

B. Related Matters (37 C.F.R. § 42.8(b)(2))

The following litigation may be affected by a decision in this proceeding:

NIKE, Inc. v. PUMA North America, Inc., No. 1:18-cv-10876 (D. Mass.) (the “District Court Action”).

C. Lead and Back-Up Counsel (37 C.F.R. § 42.8(b)(3)) and Service Information (37 C.F.R. § 42.8(b)(4))

Petitioner provides the following counsel and service information. A Power of Attorney accompanies this Petition pursuant to 37 C.F.R. § 42.10(b).

| Lead Counsel | Back-up Counsel |
|---|--|
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Service information for lead and back-up counsel is provided in the designation of lead and back-up counsel, above. Service of any documents via hand-delivery may be made at the postal mailing addresses listed above. Petitioner also consents to electronic service by email at puma@brownrudnick.com.

VIII. GROUNDS FOR STANDING (37 C.F.R. § 42.104(A))

Petitioner certifies that the '046 Patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting an *inter partes* review challenging the claims of the '046 Patent on the grounds identified in herein. Petitioner further certifies that the prohibitions of 35 U.S.C. § 315(a)–(b) are inapplicable.

IX. PAYMENT OF FEES (37 C.F.R. § 42.15(A))

The undersigned authorizes the Office to charge the fee required for this Petition for *Inter Partes* Review to Deposit Account No. 50-0369. Any additional fees that might be due are also authorized.

U.S. PATENT NO. 9,375,046

Dated: May 3, 2019

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

The undersigned hereby certifies that the portions of the above-captioned PETITION FOR *INTER PARTES* REVIEW specified in 37 C.F.R. § 42.24 has 12,980 words in compliance with the 14,000 word limit set forth in 37 C.F.R. § 42.24. This word count was prepared using Microsoft Word 2010.

Dated: May 3, 2019

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e)(4) and § 42.105, the undersigned hereby certifies that a copy of this **PETITION FOR *INTER PARTES* REVIEW** and supporting materials has been served on Patent Owner via Priority Mail Express at the correspondence addresses of record for the '046 Patent as follows:

NIKE, Inc./BGL
P.O. Box 10395
Chicago, Illinois 60610

A courtesy copy of the Petition for *Inter Partes* Review and supporting material has also been sent to Patent Owner's counsel in the District Court Action via e-mail as follows:

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U.S. PATENT NO. 9,375,046

Dated: May 3, 2019

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