

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SKECHERS U.S.A., Inc.,
“Petitioner”

v.

NIKE, INC.,
“Patent Owner”

U.S. Patent No. 9,730,484

Title:
Article of Footwear Having a Flat Knit Upper Construction
or Other Upper Construction

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,730,484**

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CLAIM LISTING

Claim Element	LIMITATION
1[pre]	An article of footwear comprising
1[a]	an upper including a flat-knitted element formed from at least one yarn mechanically manipulated in a flat-knitting process, the flat-knitted element including a first layer having:
1[b]	a central portion having a domed, three-dimensional structure configured for extending over the top of a foot;
1[c]	a first side portion being formed of unitary construction with the central portion and extending from a first side of the central portion; and
1[d]	a second side portion being formed of unitary construction with the central portion and extending from a second side opposite the first side of the central portion,
1[e]	the domed, three-dimensional structure shaped to extend above the plane of the first side portion and the second side portion when the flat-knitted element is in a flattened configuration.
5	The article of footwear of claim 1, wherein the knitted element defines a void for receiving a foot of a wearer.
6	The article of footwear of claim 1, wherein the knitted element defines at least a portion of an exterior surface of the upper, and the knitted element defines at least a portion of a void for receiving a foot of a wearer.
7	The article of footwear of claim 1, wherein the knitted element includes a first area and a second area, the first area including a first type of knit structure, and the second area including a second type of knit structure, the first type being different than the second type.
8	The article of footwear of claim 1, wherein the at least one mechanically manipulated yarn includes a first yarn and a different second yarn, the first yarn being located in a first area of the upper, and the second yarn being located in a second area of the upper.

Claim Element	LIMITATION
9	The article of footwear of claim 1, wherein the knitted element forms a defined shape having finished edges during the flat knitting process.
11[pre]	A method of manufacturing an article of footwear, the method comprising
11[a]	forming during a flat-knitting process an upper including a flat-knitted element including a first layer having:
11[b]	a central portion having a domed, three-dimensional structure configured for extending over the top of a foot
11[c]	a first side portion being formed of unitary construction with the central portion and extending from a first side of the central portion; and
11[d]	a second side portion being formed of unitary construction with the central portion and extending from a second side opposite the first side of the central portion,
11[e]	wherein the domed, three-dimensional structure is shaped to extend above the plane of the first side portion and the second side portion when the flat-knitted element is in a flattened configuration.
12	The method recited in claim 11, wherein the flat knitting process includes forming a first area and a second area, a stitch type of the first area being different than a stitch type of the second area.
13	The method recited in claim 11, wherein the flat knitting process includes forming a first area and a second area, a yarn type of the first area being different than a yarn type of the second area.
14	The method recited in claim 11, wherein the flat knitting process includes forming a first area and a second area, a stitch type and a yarn type of the first area being different than a stitch type and a yarn type of the second area.
15	The method recited in claim 11, further comprising assembling the flat-knitted element into an article of footwear.

Claim Element	LIMITATION
16	The method recited in claim 15, wherein the assembling includes joining side edges of the first side portion and the second side portion to form a seam extending under a foot and along a longitudinal length of the foot.
17	The method recited in claim 15, wherein the assembling includes joining rear edges of the first side portion and the second side portion to form a seam that extends upward along a heel.

EXHIBIT LIST

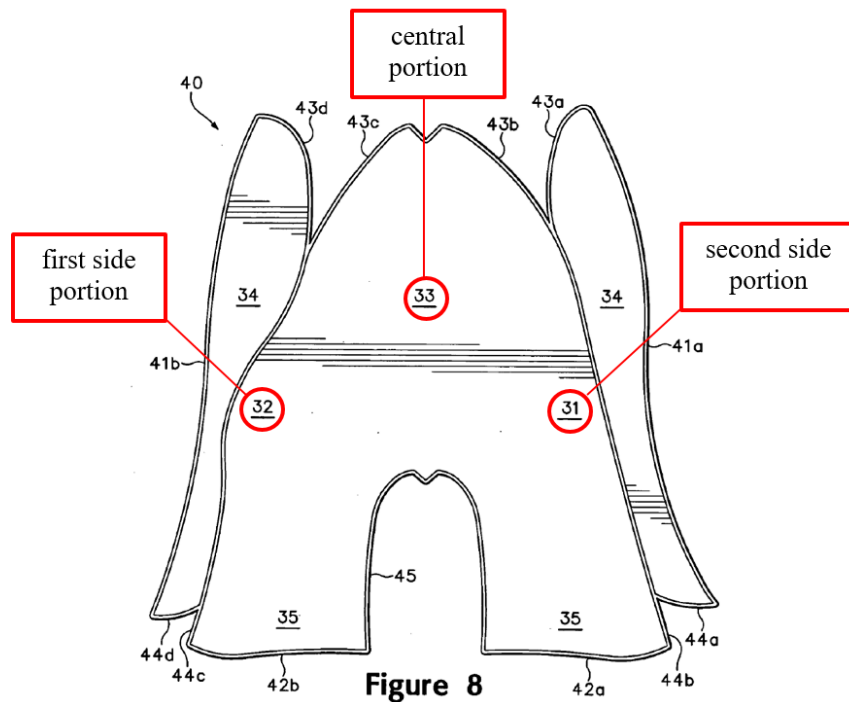
EX NO.	DOCUMENT
EX1001	U.S. Patent No. 9,730,484 (the “‘484 patent”)
EX1002	Declaration of Sabit Adanur, Ph.D.
EX1003	Declaration of Grant Delgatty
EX1004	Declaration of Ingrid Hsieh-Yee
EX1005	Joint Claim Construction and Prehearing Statement (May 15, 2024)
EX1006	Proposed Construction of Disputed Terms (May 15, 2024)
EX1007	Nike’s Opening Claim Construction Brief (May 24, 2024)
EX1008	Skechers’ Opening Claim Construction Brief (May 24, 2024)
EX1009	Nike’s Responsive Claim Construction Brief (June 7, 2024)
EX1010	Skechers’ Responsive Claim Construction Brief (June 7, 2024)
EX1011	Nike’s Initial Infringement Contentions for the ‘484 Patent (March 1, 2024)
EX1012	Vidal Guidance Memorandum (June 21, 2022)
EX1013	File History of the ‘484 Patent
EX1014	U.S. Patent App. Pub. No. 2005/0193592 (“Dua-592”)
EX1015	Wonseok Choi, <i>Three Dimensional Seamless Garment Knitting on V-Bed Flat Knitting Machines</i> , 4 J. TEXTILE AND APPAREL, TECH. AND MGMT., 1-33 (2005)
EX1016	Hong, H., <i>The development of 3D shaped knitted fabrics for technical purposes on a flat knitting machine</i>
EX1017	Japanese Patent Publication No. JPU 3118168(“Yamamoto”) - Translation
EX1018	Japanese Patent Publication No. JPU 3118168(“Yamamoto”) - Translation Declaration
EX1019	Excerpts of Prosecution History for EU App. 21166675.5
EX1020	Deposition Transcript of Christopher Pastore August 27, 2024
EX1021	Institution Decision [IPR2023-01460, Paper 9]

EX NO.	DOCUMENT
EX1022	Excerpts of William A. Rossi (ed.), <i>The Complete Footwear Dictionary</i> (2nd ed.) (Krieger Publishing Co., Malabar, Florida 2000)
EX1023	Power, E.J., <i>Knitting of Electroconductive Yarns</i> , Available at http://eprints.hud.ac.uk/id/eprint/13881/
EX1024	Power, E.J., <i>Journal of Textile and Apparel Technology and Management The Way Ahead: Transportation Materials for the Future</i> , Nov. 15, 2003 Available at http://eprints.hud.ac.uk/id/eprint/13880/
EX1025	Choi, Mee-Sung, <i>Effects of Changes in Knit Structure and Density on the Mechanical and Hand Properties of Fabrics for Outerwear</i> , TEXTILE RESEARCH JOURNAL,
EX1026	Savci, S. <i>et al.</i> , <i>A study of the deformation of weft-knit preforms for advanced composite structures, Part 1: Dry preform properties</i> , COMPOSITES SCIENCE AND TECHNOLOGY 60 (2000) 1931-1942
EX1027	Kate Sayer <i>et al</i> , <i>Seamless Knitwear - the Design Skills Gap</i> , THE DESIGN JOURNAL
EX1028	Selver, Erdem and Adanur, Sabit, <i>Processing and Property Relation of Polypropylene Monofilaments Containing Nanoclay</i> , JOURNAL OF INDUSTRIAL TEXTILES, VOL. 40, No. 2, October 2010
EX1029- EX1049	RESERVED
EX1050	David J. Spencer, <i>KNITTING TECHNOLOGY: A COMPREHENSIVE HANDBOOK AND PRACTICAL GUIDE</i> (3rd ed.) (Woodhead Publishing Limited, Cambridge, England 2001)
EX1051	U.S. Patent No. 1,803,554 ("Knilians")
EX1052	U.S. Patent No. 2,047,724 ("Zuckerman")
EX1053	U.S. Patent No. 2,675,631 ("Doughty")
EX1054	Excerpts of Sandy Black, <i>KNITWEAR IN FASHION</i> (Thames & Hudson 2002)

EX NO.	DOCUMENT
EX1055	CN 2187379Y (“Li”) - Translation
EX1056	CN 2187379Y (“Li”)
EX1057	Excerpts of Man-Made Fiber and Textile Dictionary (4th ed.) (Celanese Corporation, December 1978)
EX1058	M. Legner, <i>3D-Products for Fashion and Technical Textile Applications from Flat Knitting Machines</i> , MELLIAND INTERNATIONAL (September 2003), 238-241
EX1059	KNITTING INTERNATIONAL (February 2004), 35-39
EX1060	Oswald Rieder, <i>Flat and Circular Knitting Machine Trends</i> , INTERNATIONAL TEXTILE BULLETIN (December 2003), 49-51
EX1061	Derek T. Ward, <i>The Future of Knitting</i> , INTERNATIONAL TEXTILE BULLETIN (May 2023), 46-50
EX1062	Sabit Adanur, WELLINGTON SEARS HANDBOOK OF INDUSTRIAL TEXTILES (Johnston Industries Group 1995)

I. INTRODUCTION

The article of footwear in claim 1 of the '484 patent comprises an upper made of a “flat-knitted element” having three components: (1) a central portion having a domed, three-dimensional structure over the top of the foot, (2) a first side portion that is of unitary construction with the central portion, and (3) a second side portion that is also of unitary construction with the central portion. But that configuration reads on a basic unitary flat-knitted upper, which was not new at the time of the '484 patent; this is why the claims were rejected during prosecution as being anticipated over Nike's own prior unitary flat knit upper having the same three components.



EX1014 (“Dua-592”); EX1013 (File History), 1219-1222.

To overcome its own prior unitary flat knitted upper, Nike amended the claims to add that the domed, three-dimensional structure is “shaped to extend above the

plane of the first side portion and the second side portion when the flat-knitted element is in a flattened configuration.” EX1013, 1254. Notably, the ’484 patent does not explain what a “flattened configuration” means, and only uses the term “domed shape” once outside the claims. EX1001, 10:34-36. And while the ’484 patent ostensibly shows a dome-shaped central portion (element 71) in FIGs, 10A-10C, the ’484 patent is devoid of any discussion of how such a dome shape is formed, other than to announce that it is “formed through the flat knitting process.” *Id.*

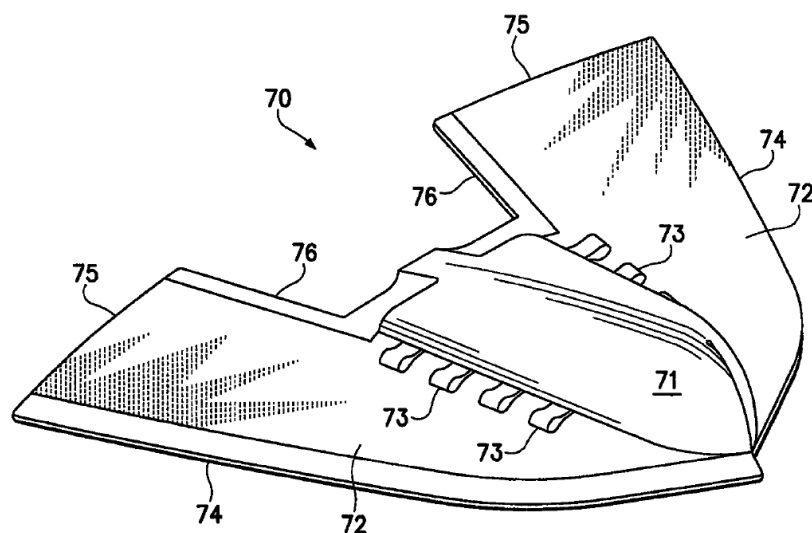


Figure 10A

In fact, the complete supporting disclosure for FIGs. 10A-10C—the only figures depicting a dome shape central portion—spans only 29 lines. *See id.*, 10:18-46. And that was the disclosure cited during prosecution as allegedly supporting the added domed, three-dimensional structure. EX1013, 1258. That scant disclosure makes clear that Nike did not invent a new type of flat knitting capable of producing domed, three-dimensional structures where existing knitting technology could not.

The fact is that flat knitting machines, such as the machines manufactured by Shima Seiki, were producing three-dimensional shapes long before the '484 patent, including complete seamless three-dimensional garments.

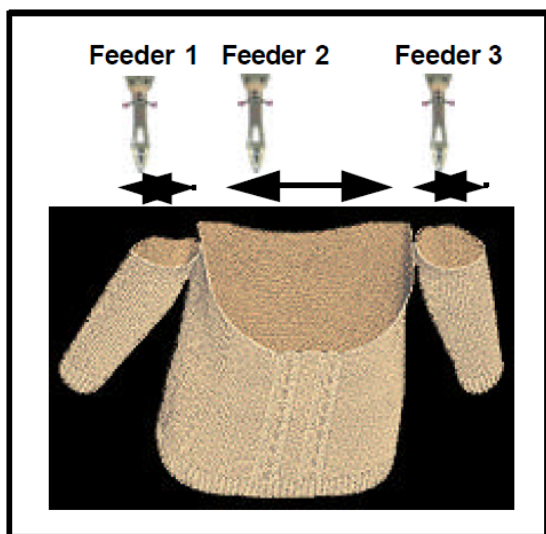


Figure 6.1. Three-dimensional complete garment knitting until underarm point (Shima Seiki)

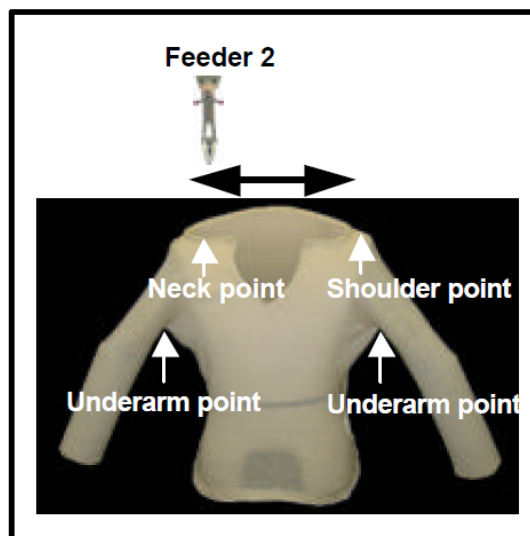


Figure 6.2. Three-dimensional complete garment knitting after underarm point

EX1015 (Choi), 13.

The '484 patent appears to admit this was known, noting how “[f]lat knitted elements also can be formed directly in desired three dimensional shapes ...” EX1001, 4:55-56. Indeed, during prosecution of a European counterpart to the '484 patent, and in response to a rejection of insufficient disclosure relating to the domed, three-dimensional knitted element, Nike argued that “[t]here are numerous prior art documents which disclose that achieving three-dimensional knitted textiles may generally be obtained through flat knitting ...,” and cited to the Hong reference (EX1016) as one such example. EX1019, 8. *See Caterpillar Tractor Co. v. Berco*,

S.P.A., 714 F.2d 1110, 1116 (Fed. Cir. 1983) (“a representation to foreign patent offices should be considered ... and when such matters comprise relevant evidence[,] they must be considered.”). Further, Nike’s own expert in another IPR challenging the ’484 patent (IPR2023-01460) admitted that “Shima Seiki machines that had the[] capabilities to flat knit three-dimensional structures were available since the 1990s.” EX1020, 26:2-27:15. Both Hong and Choi describe the three-dimensional knitting capabilities of such Shima Seiki machines, and Nike’s own expert further confirmed that a POSITA would have been familiar with such machines. *Id.*, 19:19-21:7, 26:2-11.

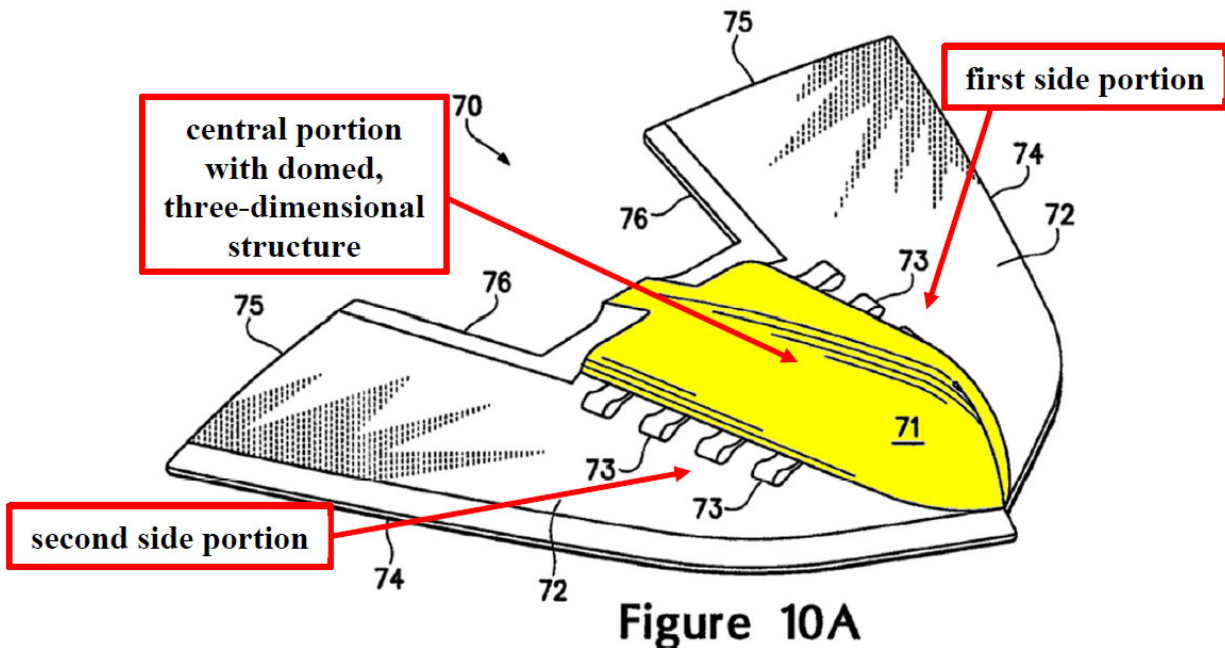
As such, Nike’s prosecution amendment did not transform its previously-anticipated claims into a new invention. Instead, the amendment merely reflected a well-known capability of prior art flat knitting machines. For that and additional reasons below, the challenged claims should be found unpatentable.

II. OVERVIEW OF THE CHALLENGED PATENT

A. Overview of the ’484 Patent

The ’484 patent discloses articles of footwear with uppers that include flat-knitted elements. EX1001, 4:28-48. In flat knitting, per the specification, knitted material is produced by knitting from alternating sides, for example by turning the material periodically. *Id.*, 7:27-30. Flat knitting contrasts with circular knitting, in which the material is knitted from the same side. *Id.*, 7:34-36.

The '484 patent states that “flat knitting can be used to provide textile structures for use in footwear uppers of a final desired shape such that textile cutting steps can be avoided (which eliminates waste, avoids the need to finish cut edges, saves time, saves money, etc.).” *Id.*, 4:51-55. In one embodiment of a flat-knit structure, an upper 70 includes a “central portion 71, a pair of side portions 72, and eight lace loops 73.” *Id.*, 10:18-23.



Id., Fig. 10A.¹ The central portion 71 has a domed, three-dimensional structure shaped to extend over a foot. EX1001, 10:34-38; EX1002, ¶¶69-71.

¹ Unless otherwise indicated, all color and text boxes in patent figures are added.

The '484 patent illustrates the “domed, three-dimensional structure” feature in only three figures (Figures 10A-10C) and provides only two short paragraphs of description for the figures. EX1001, Figs. 10A-10C, 10:18-46. Notably missing is any detail about how to knit such a three-dimensional feature. EX1002, ¶72. When Nike was confronted about this lack of disclosure in related foreign prosecution, Nike asserted that disclosure was unnecessary because knitting such three-dimensional features was well-known. *See infra*, Section II.C.

B. Prosecution History of the '484 Patent

The Examiner rejected the original claims as anticipated by Dua-592 (EX1014) or obvious over Dua-592 in view of a secondary reference. EX10132, 1218-1226. Nike amended the claims to add that the domed, three-dimensional structure is “shaped to extend above the plane of the first side portion and the second side portion when the flat-knitted element is in a flattened configuration.” EX1013, 1254. The Examiner next issued a Notice of Allowance without providing additional comments regarding the claims. *Id.*, 2018.

C. Prosecution of Related European Counterpart

After issuance of the '484 patent, Nike² filed a European counterpart to the '484 patent, which was assigned European Patent Application No. 21166675 (“the EP '675 application”). Claim 1 of the EP '675 application included similar limitations to the '484 patent's claim 1. EX1019, 11.

During examination, the Examiner objected to the EP '675 application's claim 1 for multiple reasons, including because the application included insufficient disclosure for a skilled person to carry out the claimed invention. EX1019, 15. The Examiner explained that “nothing is described nor disclosed nor explained on how a domed three-dimensional knitted element could be manufactured through a flat-knitting process.” *Id.* According to the Examiner, “[i]t is clear to any skilled person that the present subject-matter lacks essential information on how such an effect (domed portion) could be achieved.” *Id.*

In response, Nike pointed to Hong, rather than its own disclosure, arguing the objection was unfounded because “[t]here are numerous prior art documents which disclose that achieving three-dimensional knitted textiles may generally be obtained

² Nike filed this European counterpart through its subsidiary entity NIKE Innovate C.V.

through flat knitting, such as e.g. ‘The development of 3D shaped knitted fabrics for technical purposes on a flat knitting machine’, **Hong et al.**” *Id.*, 8.³

Hong describes what was, in 1994, a new commercial electronic flat-knitting machine by Shima Seiki and provides specifics of how it can produce three-dimensional shaped fabrics for a variety of technical purposes. EX1016 (Hong), 189-191. Hong also describes a variety of exemplary three-dimensional shaped knitted fabrics developed on the machine, including tubular forms, spherical forms, and others. *Id.*, 191-194. Hong explains that “[o]ne of the main advantages [of such flat-knitting machines] is the facility of these machines to knit fabric pieces to a particular shape or form.” *Id.*, 189; EX1002, ¶¶74-77.

D. lululemon IPR

lululemon filed an IPR based on Lockwood, Dua-592, Norton, Hong, and Voughlohn. *See* IPR2023-01460 (“the lululemon IPR”). While the challenge here also relies on Dua-592 and Hong, it additionally relies on Yamamoto and Choi and does not rely on Lockwood, Norton or Voughlohn. The Board granted institution, finding a reasonable likelihood of success that the ’484 patent is unpatentable.

III. IDENTIFICATION OF CHALLENGE AND GROUNDS

The asserted grounds rely on the following references:

³ Unless otherwise noted, all emphasis is added.

- US2005/0193592 to Bhupesh Dua et al., entitled “Article of footwear having a textile upper,” was published on September 8, 2005 (“Dua-592”) (EX1014) and is prior art to the ’484 patent under 35 U.S.C. §102(b)
- Choi, Wonseok, et al., “Three dimensional seamless garment knitting on V-bed flat knitting machines” (“Choi”) (EX1015) is prior art to the ’484 patent under 35 U.S.C. §102(b) because it was publicly available no later than one year before the ’484 patent’s earliest priority date. *See* EX1004 (Hsieh-Yee Declaration), ¶¶26-58, Ex. A (establishing the authenticity and public availability of Choi before the ’484 patent’s earliest priority date).
- Hong, et al., “The development of 3D shaped knitted fabrics for technical purposes on a flat knitting machine” (“Hong”) (EX1016) is prior art to the ’484 patent under 35 U.S.C. §102(b) because it was publicly available no later than one year before the ’484 patent’s earliest priority date. *See* EX1004 (Hsieh-Yee Declaration), ¶¶75-93, Ex. O (establishing the authenticity and public availability of Hong before the ’484 patent’s earliest priority date).
- JP3118168 to Keika Yamamoto, titled “Boot,” was published on January 26, 2006 (“Yamamoto”) (EX1017; EX1018) and is prior art

under pre-AIA 35 U.S.C. §102(a) based on the '484 patent's earliest possible priority date.

The asserted grounds are:

- **Ground 1**: Claims 1, 5-9, and 11-17 are obvious over Dua-592 in view of Hong and/or Choi.
- **Ground 2A**: Claims 1, 5-9, and 11-15 are obvious over Yamamoto in view of Choi.
- **Ground 2B**: Claims 16-17 are obvious over Ground 2A in further view of Dua-592.

IV. LEVEL OF ORDINARY SKILL IN THE ART

The '484 patent relates to an article of footwear comprising an upper that includes a knitted textile element. EX1001, 3:10-14. A person of ordinary skill in the art ("POSITA") in the field of the '484 patent in November 2006 would have been someone with at least a few years of experience in knit materials and knitting method and machines that can be used in making footwear, or a bachelor's degree in textile-related sciences, engineering, or industrial product design, or equivalent academic or work experience, including in the footwear industry. *See* EX1002 (Adanur Declaration), ¶68. Such a person of ordinary skill would have at least a general understanding of general construction processes and materials used in the manufacturing process of fabric-based articles. For individuals with a lower

educational level, a person could still be of ordinary skill in the art provided that person's working experience compensates for any such lower educational level, or vice versa. *See id.*

This Petition does not turn on this specific definition of the level of ordinary skill. The claims would have been obvious from the perspective of any reasonable definition of a POSITA.

V. CLAIM CONSTRUCTION

During the parallel litigation, the parties agreed that the term “central portion having a domed, three-dimensional structure” means “central portion having a domed, three-dimensional structure formed during the flat-knitting process, and not afterward.” EX1005, 2. Moreover, the parties in the lululemon IPR agreed to the same construction, which the Board adopted as its construction at institution. EX1021, 6. Skechers applied this construction in this Petition.

Petitioner does not believe the prior art or grounds below present any issues which require specific terms to be construed. Thus, the Board need not specially construe any claim terms in this proceeding.

VI. GROUND 1: CLAIMS 1, 5-9, AND 11-17 ARE OBVIOUS OVER DUA-592 IN VIEW OF HONG AND/OR CHOI

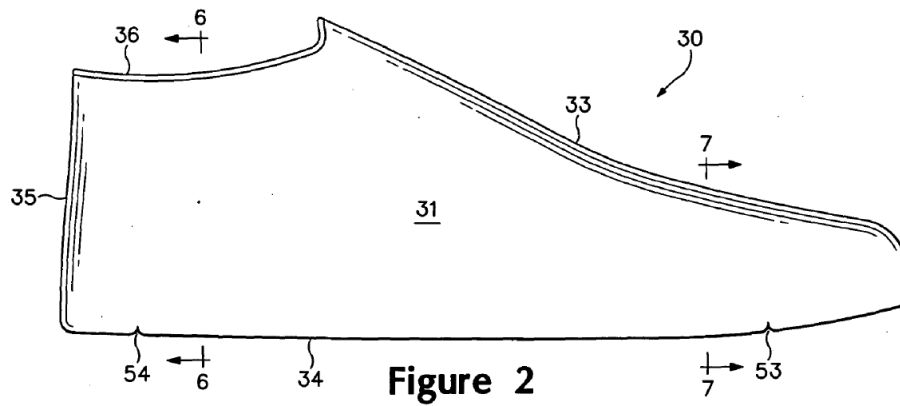
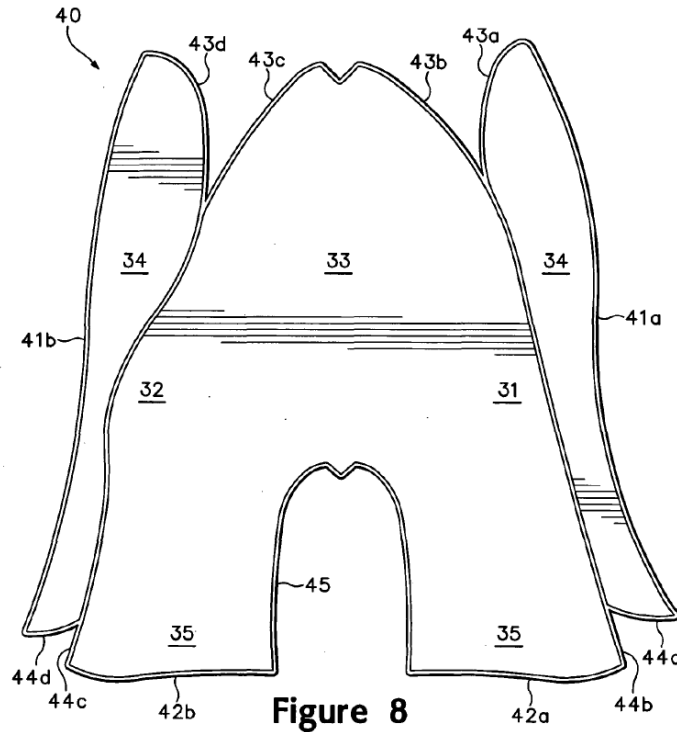
A. Overview of the Prior Art

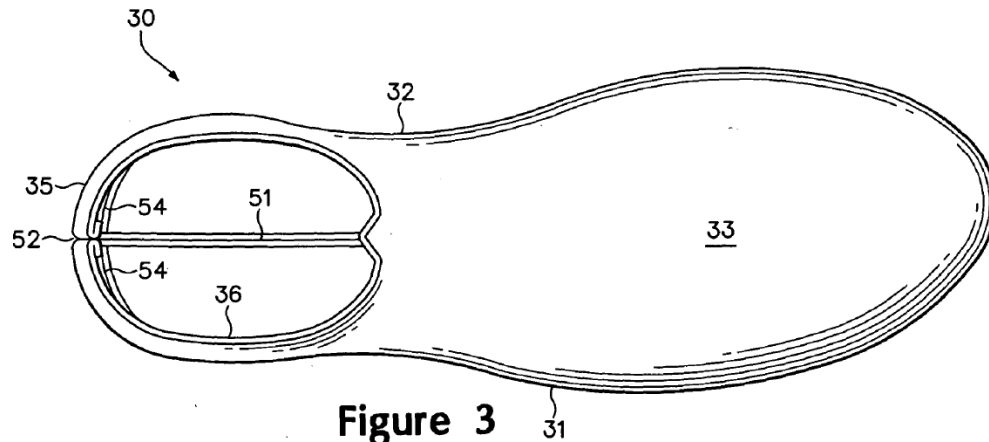
i. Dua-592

Dua-592 discloses articles of footwear, including uppers produced using a flat-knitting process. EX1014, Abstract, [0061]. Dua-592 teaches that flat knitting is a type of weft knitting, which is one of the two main mechanical processes developed for knitting a textile (i.e., warp and weft knitting), and the same type of knitting process used in the '484 patent. EX1014, [0044]; EX1002, ¶¶81-82; EX1001, Abstract. Dua-592 states that manufacturing efficiency is increased by forming its upper to be “a single, unitary element of material” rather than numerous jointed elements. EX1014, [0060]. According to Dua-592, flat-knitting may be used to “impart various textures, different properties, or different yarn types to the textile element.” *Id.*, [0061]. For example, Dua-592 explains the materials comprising a yarn may be selected to impart a variety of physical properties to a textile element, such as strength, stretch, support, stiffness, recovery, fit, and form. *Id.*, [0052], [0056]; EX1002, ¶83.

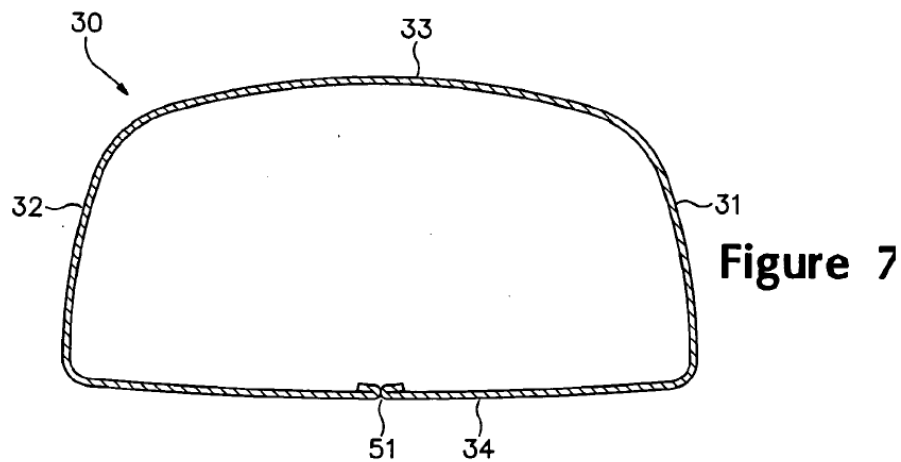
Dua-592 discloses various embodiments of knitted textile elements for forming uppers. For example, one embodiment comprises a “[t]extile element 40 [that] exhibits the general shape depicted in FIG. 8 prior to the formation of seams

51-54. Following formation of seams 51-54, however, textile element 40 exhibits the shape of upper 30 depicted in FIGS. 2-7.” EX1014, [0038]; EX1002, ¶84.





Dua-592 also discloses that the instep region 33 of FIG. 8 above would form a domed, three-dimensional structure when the textile element 40 is assembled into an article of footwear, as shown in the cross section below.



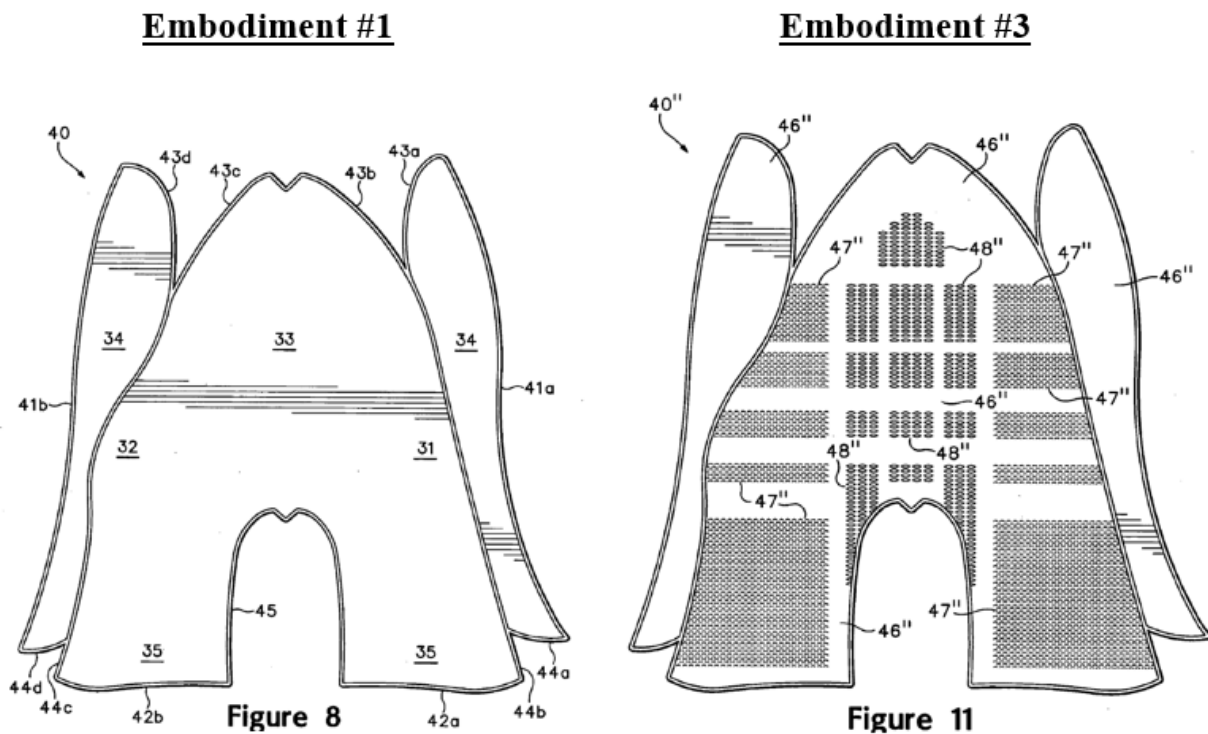
Dua-592's textile element embodiments are summarized below:

- Embodiment #1 – textile element 40 of FIGs. 1-9;
- Embodiment #2 – textile element 40' of FIG. 10;
- Embodiment #3 – textile element 40" of FIG. 11;
- Embodiment #4 – textile element 140 of FIG. 12; and

- Embodiment #5 – textile element 240 of FIGs. 13-14.

EX1002, ¶¶85-86

Dua-592's embodiments share many common features, including for example having the same “general shape” and the fact that each comprises a flat-knitted element which is formed into a three-dimensional shoe upper. EX1014, [0053]-[0055]; EX1002, ¶87. For example, Embodiment #3 differs from Embodiment #1 only with respect to having differing textured areas, as shown below.

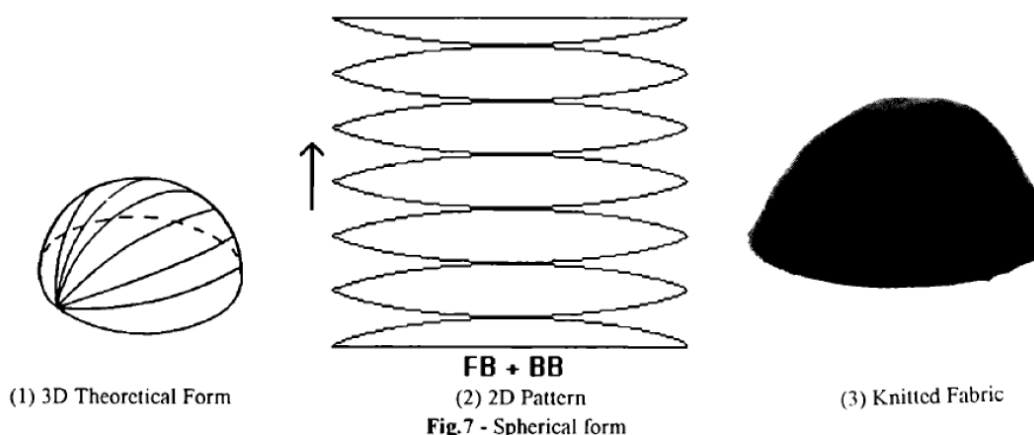


Moreover, Dua-592's disclosure of Embodiment #3 explains how its various textured areas extend over the lateral region 31, medial region 32, and instep region 33 which are depicted in FIGs. 1-8. EX1014, [0055]. Thus, a POSITA would

understand that Dua-592's teachings with respect to Embodiment #1 would be equally applicable to at least Embodiment #3. EX1002, ¶88.

ii. Hong

Hong (EX1016) dates back to 1994 and describes how flat knitting can be used to form a variety of shapes across a wide range of applications, including “protection clothing, transportation related textiles (cars, planes and space crafts), geotextiles, building construction related textiles, packaging materials, military related textiles, medical textiles, sports related textiles, etc.” EX1016, 189; EX1002, ¶89. Hong was neither cited nor considered during the prosecution of the '484 patent. An example of one flat knit three-dimensional spherical shape from Hong is below.



EX1016, Fig. 7.

Hong explains how a three-dimensional form or shape (e.g., above left) may be transferred to a two-dimensional pattern (e.g., above middle), which is used by

an electronic flat knitting machine to produce a knitted three-dimensional shaped fabric (e.g., above right). *Id.*, 189, 192-193; EX1002, ¶90. Hong discusses three different methods for flat knitting three-dimensional shapes, including “using different structural combinations, using different loop lengths, and altering the number of knitting needles and knitted courses.” EX1016, 189. Hong discloses that “[o]ne of the main advantages is the facility of these machines to knit fabric pieces to a particular shape or form.” *Id.* “By using the new flat knitting machines, it is possible not only to knit the new loop structures which are not possible on the conventional flat knitting machines, but also knit *fully fashioned garments*.” *Id.*; EX1002, ¶90. Nike’s expert from the -01460 IPR acknowledged that “knit to shape on one hand is another way of saying fully fashioned,” and that “within the realm of knit to shape ... we could include something like this patented object with the domed three-dimensional structure. It could be considered a form of knit to shape.” EX1020, 55:18-19, 57:6-13.

Hong also explains that the ability to flat knit fully fashioned garments “is very important to reduce the waste of expensive materials during cutting as well as in eliminating the additional making up operation.” EX1016, 189. “[K]nitting directly the 3D shapes can overcome fabric waste and diminish the labour cost inherent to the use of two-dimensional fabrics which have to fit the variable geometry of a three-dimensional seat bum.” *Id.*, 193; EX1002, ¶91.

Hong concludes by stating that its disclosure presents various examples of three-dimensional shaped knitted fabrics and encouraging a skilled artisan to exploit the capacity of a flat knitting machine to “knit more types of three-dimensional knitted fabrics.” EX1016, 194; EX1002, ¶92.

iii. **Choi**

Choi disclose details for seamless garment knitting techniques on V-bed flat knit machines as early as 1995, including to describe and “compare the machines from two major flat-knitting machine suppliers, Shima Seiki and Stoll.” EX1015, Abstract; EX1002, ¶93. Choi teaches that “[s]eamless knitting, or complete knitting, which produces one entire complete garment without a sewing or linking process, provides a variety of advantages in knitting production such as savings in cost and time, higher productivity, quick response production and other advantages.” EX1015, 5. Choi further explains that “seamless garment knitting makes it possible not only to create several types of tubular formed knitting but also to build diverse design structures on the tubular knitted garments simultaneously.” *Id.*, 6. Examples in which three-dimensional flat knitting has been used include “fashion, upholstery, industrial, automotive, and medical textiles.” *Id.*, 7. One of the oldest applications for flat knitting, dating back to the 1800’s, was to make articles of footwear in the form of socks. *Id.*, 5; EX1002, ¶93.

Choi describes the difference between fully-fashioned knitting and seamless knitting. EX1002, ¶94. With fully-fashioned knitting, “all parts of the garment are knitted separately, [thus] the fully-fashioned knitting still requires a post sewing or linking process,” where “[l]inking is defined as a process of joining side seams or edges of fabric pieces together with a row of knitting on a linking machine.” EX1015, 9. In contrast, “**seamless flat V-bed knitting actually creates complete garments, which do not require any kind of cutting or sewing process.**” *Id.*, 12.

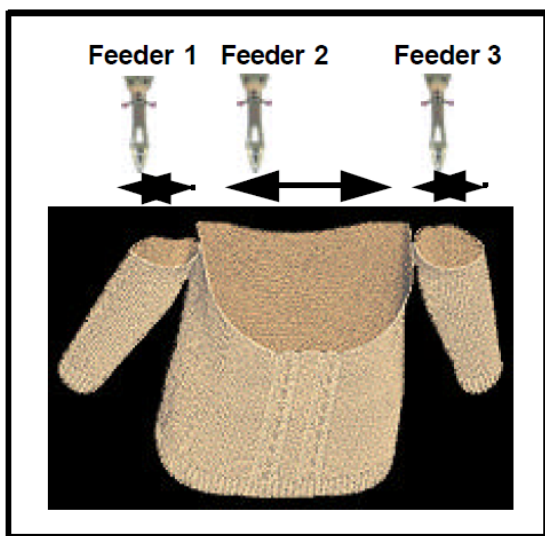


Figure 6.1. Three-dimensional complete garment knitting until underarm point (Shima Seiki)

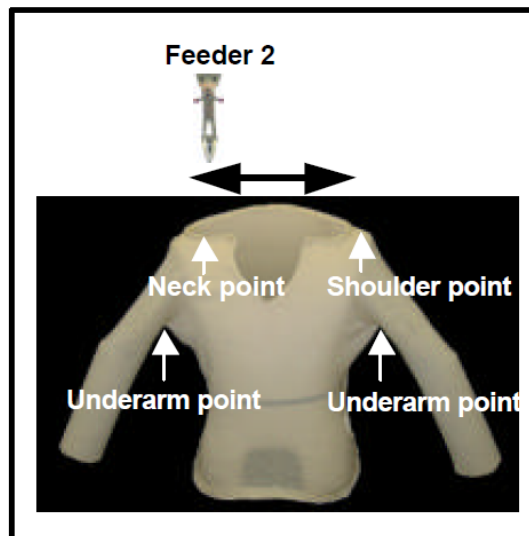


Figure 6.2. Three-dimensional complete garment knitting after underarm point

Id., 13.

One manufacturer of seamless flat V-bed knitting machines is Shima Seiki, which manufactures “the innovative WHOLEGARMENT® machine that can produce a one-piece three-dimensional complete garment with no stitching, linking or sewing processes.” *Id.*, 14.

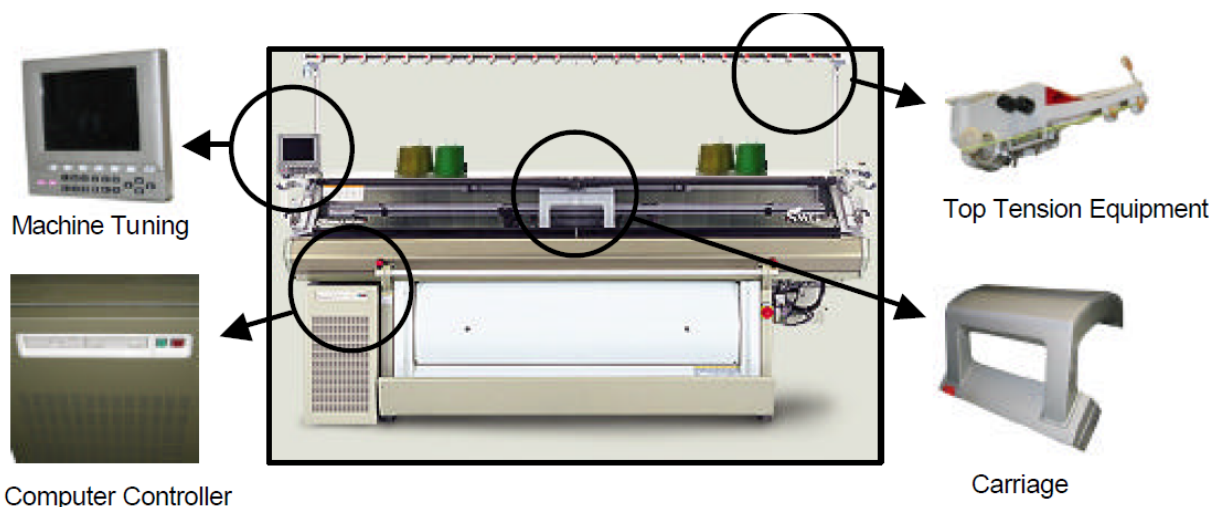


Figure 7.1. SWG-V® machine

Id., 15.

B. Claim 1

Element 1[pre]: *An article of footwear comprising*

Each of Dua-592's textile elements are knitted components formed into an article of footwear. EX1002, ¶100. For example, the footwear 10 of Embodiment #1 includes sole structure 20 and an upper 30, where “[s]ole structure 20 is secured to a lower portion of upper 30.” EX1014 (Dua-592), [0033]; *see also* [0034]-[0035] (describing sole structure). Moreover, “[u]pper 30 is at least partially formed from a textile element 40 that defines an interior void for comfortably receiving a foot,” where the “textile element 40 may form substantially all of upper 30” *Id.*, [0033]; Abstract (“An article of footwear and a method of manufacturing the article of footwear are disclosed.”).

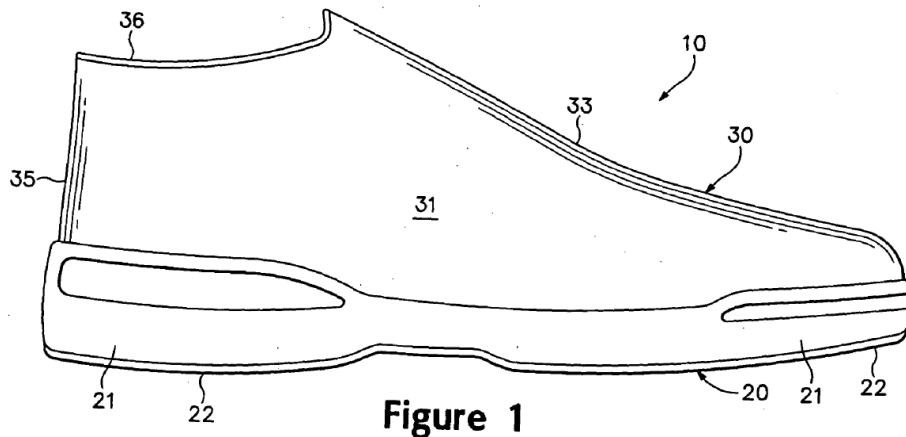


Figure 1

Element 1[a]: *an upper including a flat-knitted element formed from at least one yarn mechanically manipulated in a flat-knitting process, the flat-knitted element including a first layer having:*

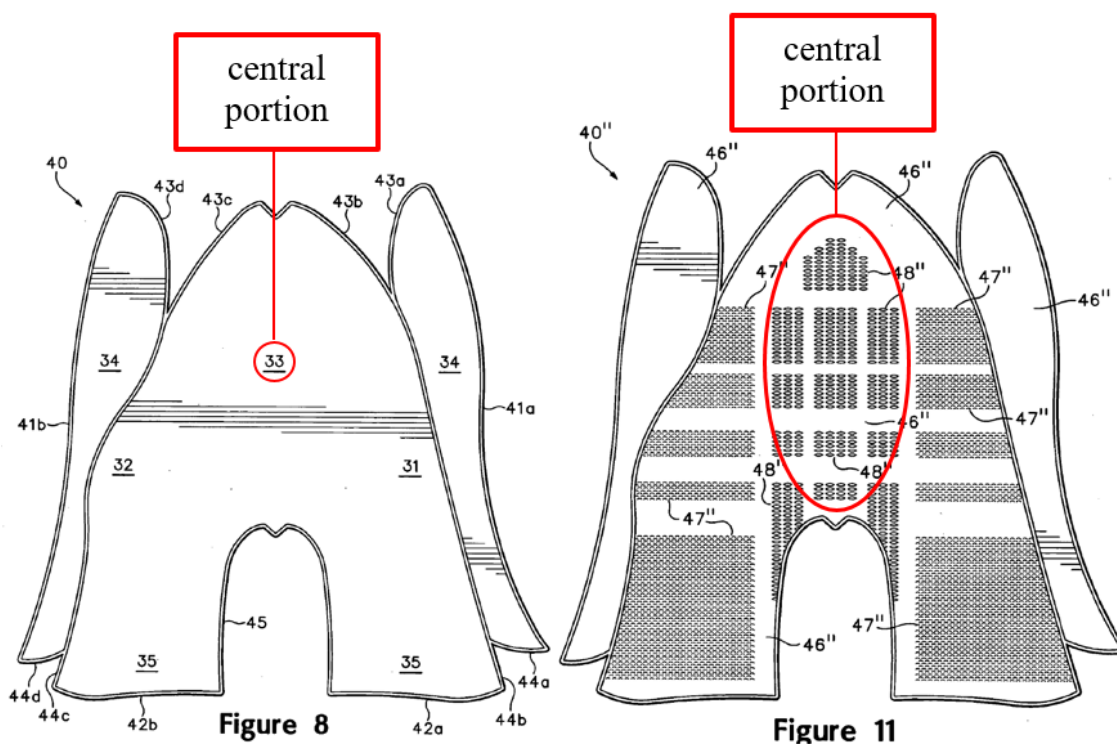
Dua-592 describes that its flat-knitted elements, including the textile element 40 of Embodiment #1 and element 40" of Embodiment #3, can be formed through a "variety of mechanical processes," including "flat knitting." EX1014 (Dua-592), [0044]-[0045], [0045] ("[T]extile element 40 may be formed on either a warp knitting machine or a weft knitting machine."); [0055]-[0056] (describing Embodiment #3 as a "single, unitary element of material" formed using one of a variety of knitting processes, including "flat knitting"); Claim 65 ("An article of footwear comprising: an upper incorporating a textile element formed through a flat knitting process"); EX1002, ¶101.

Dua also discloses "[t]he upper of an article of athletic footwear, for example, may be formed from multiple material layers that include an exterior layer, an

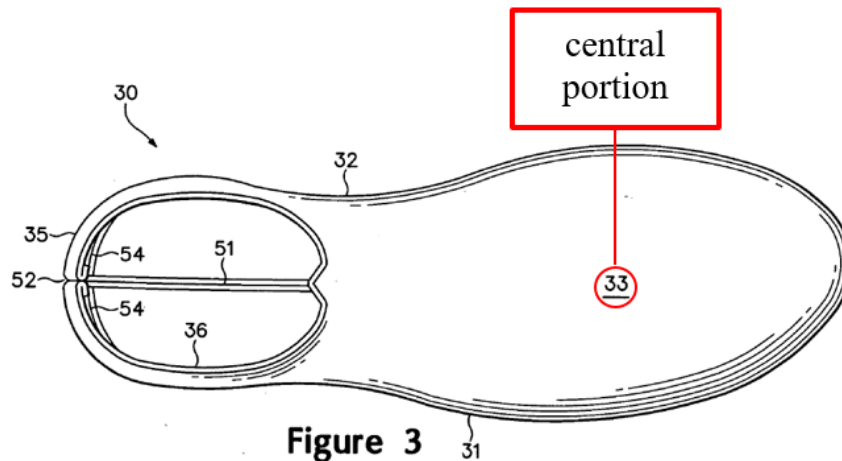
intermediate layer, and an interior layer.” EX1014, [0006]. Embodiment #1 and Embodiment #3 include at least one layer. EX1014 (Dua-592), FIG. 8, 11; EX1002, ¶102.

Element 1[b]: *a central portion having a domed, three-dimensional structure configured for extending over the top of a foot;*

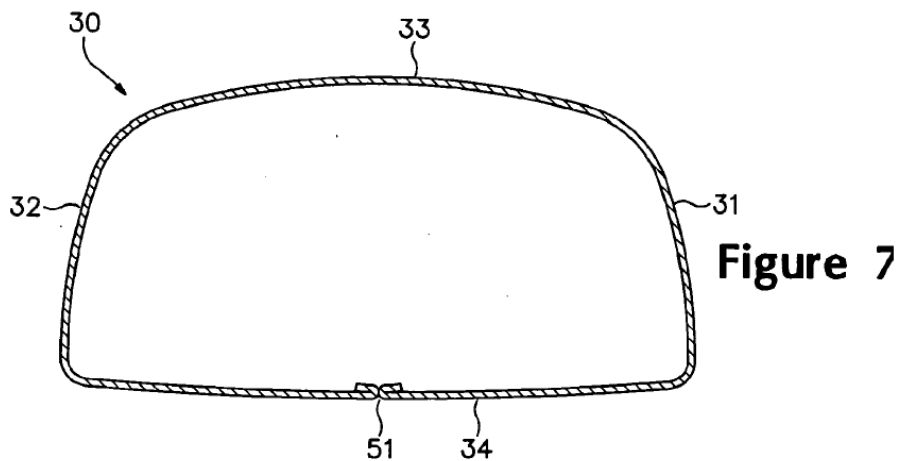
Dua-592's flat-knitted elements of Embodiment #1 and #3 have a central portion extending over the top of the foot, as shown below. EX1002, ¶¶104-105.



An upper 30 formed from Dua-592's flat-knitted elements are depicted in FIGS. 2-7. EX1014 (Dua-592), [0036]. Dua-592 teaches that "instep region 33 extends over an instep area of the foot," as shown in FIG. 3 below. *Id.*



As shown in cross section FIG. 7, the central portion corresponding to instep region 33 would have “a domed, three-dimensional structure.”



Id., FIG. 7. While Element 1[e] below requires the flat-knitted element to have the “domed, three-dimensional structure” when “in a flattened configuration,” Element 1[b] contains no such limitation and is therefore satisfied by Dua-592’s assembled upper 30, as shown above. Moreover, claim 1 is to an “article of footwear,” not an upper, and therefore a POSITA would understand the “central portion” corresponds

to a state in which the upper is assembled into an article of footwear. EX1002, ¶¶106-107.

In any event, to the extent that the “domed, three-dimensional structure” of Element 1[b] does not correspond to an assembled state of the upper, it would have been obvious to form Dua-592’s flat-knit textile elements with a domed, three-dimensional central portion extending over the top of the foot in view of the express teachings of Hong and/or Choi. EX1002, ¶108.

Hong explains that flat knitting a three-dimensional structure was well-known and common. For example, Hong discloses “[t]echnical textiles have been applied in different fields such as protection clothing, transportation related textiles (cars, planes and space crafts), geotextiles, building construction related textiles, packaging materials, military related textiles, medical textiles, sports related textiles, etc.” EX1016 (Hong), 189. Hong further explains that “[f]lat knitting machines are traditionally used for producing pullovers and other outerwear garments. One of the main advantages is the facility of these machines to knit fabric pieces to a particular shape or form.” *Id.*; Abstract (“The use of a new electronic flat knitting machine (Shima Seiki SES 122FF) for *producing three-dimensional shaped fabrics* for technical purposes is described.”); 189 (“This work describes the use of the new *flat knitting machines to knit 3D structures*.”); 194 (“By exploiting the capacity of this

[flat-knitting] machine, it is possible to *knit more types of three-dimensional knitted fabrics.*”); EX1002, ¶109.

Hong discloses that more complicated structures may have sections which are knitted separately before or after they are knitted together, such as the multi-tubed structure below.

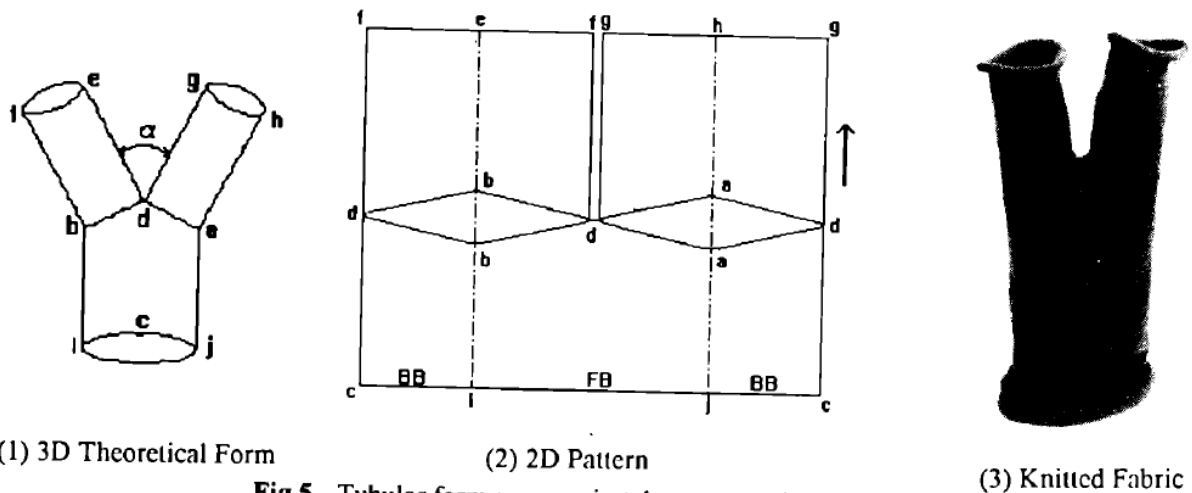
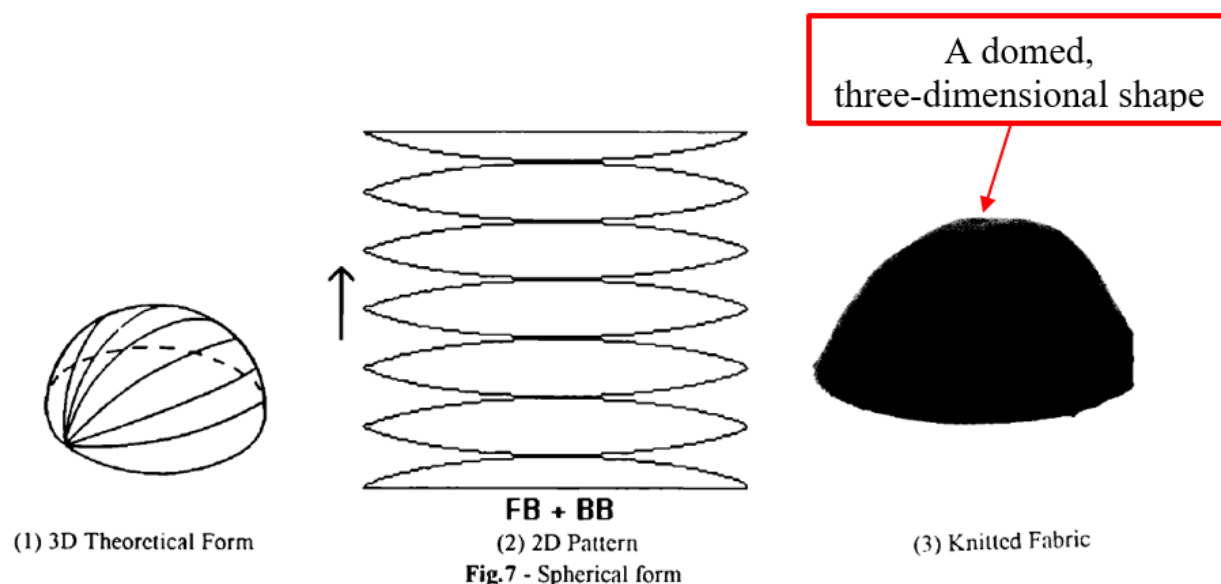


Fig.5 - Tubular form : one main tube connected to two smaller tubes

EX1016 (Hong), 192 (“During knitting, the two smaller tubes are separately knitted with two cam systems.”); EX1002, ¶110.

Even if the sections were knitted first and then joined “together with a row of knitting on a linking machine,” it all would part of the knitting process; EX1002, ¶111; EX1015 (Choi), 32, 9 (“[B]ecause all parts of the garment are knitted separately, the fully-fashioned knitting still requires a post sewing or linking process,” where “[l]inking is defined as a process of joining side seams or edges of fabric pieces together with a row of knitting on a linking machine.”). In any event, a POSITA would understand that while fully-fashioned knitting may require linking

for more complex shapes, such shapes are not at issue in the '484 patent. EX1002, ¶¶112-113. Instead, Hong teaches that “[i]t is not difficult to knit a spherical form in the SES 122FF flat knitting machine.” EX1016 (Hong), 192.



Id., 193. Hong explains that the SES 122FF machine can produce knitted components which incorporate both three-dimensional and planar structures, such as car seats and head rests. *See id.*, 189, 193-194 (Figs. 8-9). In contrast to the multi-tubed structure of Hong’s FIG. 5 above, there is no suggestion in Hong, nor would a POSITA understand, that any “post sewing or linking process” would be required to form knitted components which incorporate a basic domed or spherical shape of the type at issue in the '484 patent, along with planar structures. EX1002, ¶¶112-113.

Hong also discloses that, by using Shima Seiki flat knitting machines, it is possible to knit fully fashioned garments, and that there are benefits in doing so.

EX1002, ¶114; EX1016 (Hong), 189. “This is very important to reduce the waste of expensive materials during cutting as well as in eliminating the additional making up operation.” *Id.* In addition, “knitting directly the 3D shapes can overcome fabric waste and diminish the labour cost inherent to the use of two-dimensional fabrics which have to fit the variable geometry of a three-dimensional seat bum.” *Id.*, 193. Indeed, Nike’s own expert from the -01460 IPR admitted that “Shima Seiki machines that had the[] capabilities to flat knit three-dimensional structures were available since the 1990s.” EX1020, 26:2-27:15.

Thus, Hong expressly confirms that flat knitting three-dimensional shapes in knitted elements was well-known and had known benefits, such as reducing fabric waste and labor costs. EX1002, ¶115. Moreover, as explained above, Nike admitted during prosecution of the European counterpart to the ’484 patent that flat knitting a three-dimensional structure was well-known and common, and specifically relied on Hong to overcome a rejection that the disclosure lacked essential information on how to create such a domed, three-dimensional structure. *See* Section II.C.

To the extent that Dua-592 in combination with the 1994 teachings of Hong do not render obvious Element [1b], a POSITA would understand from Choi that three-dimensional shapes could be formed on flat knitting machines without any post sewing or linking process. EX1002, ¶116. Specifically, Choi teaches that “[s]eamless knitting, or complete knitting, which produces one entire complete

garment *without a sewing or linking process....*” EX1015 (Choi), 5; 12 (“seamless flat V-bed knitting actually creates complete garments, *which do not require any kind of cutting or sewing process.*”); 14 (“the innovative WHOLEGARMENT® machine that can produce a one-piece three-dimensional complete garment with no stitching, linking or sewing processes.”).

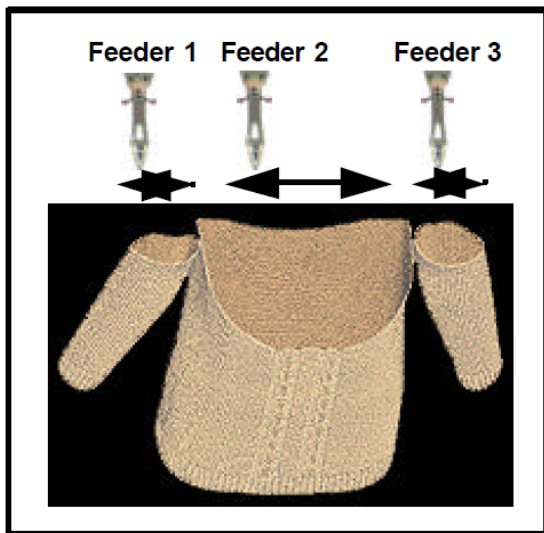


Figure 6.1. Three-dimensional complete garment knitting until underarm point (Shima Seiki)

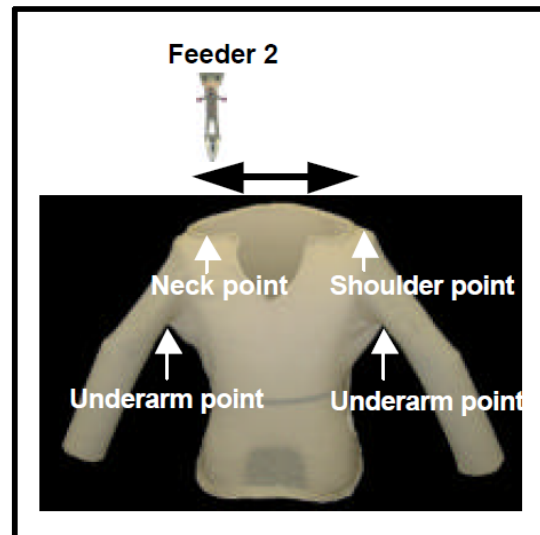


Figure 6.2. Three-dimensional complete garment knitting after underarm point

Id., 13.

Choi explains that “seamless garment knitting makes it possible not only to create several types of tubular formed knitting but also to build diverse design structures on the tubular knitted garments simultaneously.” *Id.*, 6. Moreover, a POSITA would understand that Choi’s three-dimensional flat knitting can be used in a wide variety of applications, including footwear such as socks. *Id.*, 2 (“The end use of knitted fabrics, created either in tubular or flat form, can be apparel and other

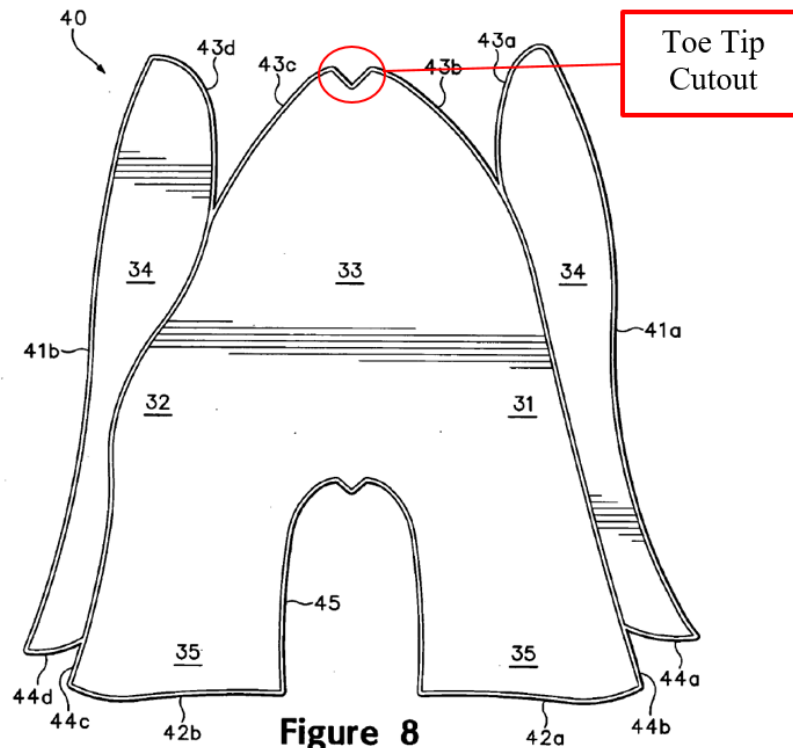
products including sweaters, underwear, hosiery, *socks and stockings.*”); *Id.*, (“A diverse range of seam-free products can be created such as hand gloves, hats, *socks*, and sweaters according to the machine gauge and types of machine.”). Choi teaches that it is possible to seamlessly knit various three-dimensional structures, including not only “hand gloves, hats, socks, and sweaters,” but also three-dimensional upholstery (e.g., office chairs), car seats, and medical textiles (e.g., orthopedic supports, compression stockings, etc.). *Id.*, 7-8; EX1002, ¶117.

A POSITA would have been motivated to apply Choi’s flat knitting teachings to produce the flat-knitted elements of the ’592 patent because Choi explains that doing so results in “savings in cost and time, higher productivity, quick response production and other advantages.” *Id.*, 5; EX1002, ¶118. Choi specifically touts seamless knitting technology as “eliminat[ing] post labor work, which saves production time and cost.” EX1015 (Choi), 1. A POSITA would be particularly motivated to use seamless knitting technology in the context of a knit shoe upper because, as Mr. Delgatty states, “it is generally desirable to minimize the number of seams required for a given upper.” EX1003 (Delgatty), ¶11; EX1002, ¶119 (“It is generally desirable in apparel to minimize seams which contact the wearer, particularly where there could be rubbing between the fabric and body, which would apply in the context of shoe uppers as well.”); EX1015 (Choi), 1 (seamless “technology offers knitwear consumers more comfort and better fit by eliminating

seams.”). A POSITA would further recognize additional benefits include minimizing the “risk of defects and damages” and allowing designers to “create design structures and patterns across the entire garment.” EX1015 (Choi), 1; EX1002, ¶120. The application of Choi’s seamless knitting technology to shoes was obvious, particularly in light of the recognized broad applicability of three-dimensional seamless knitting, including to footwear, such as socks and stockings, as noted above. EX1015 (Choi), 29 (“Three-dimensional seamless knitting with its diverse capabilities can be applied to numerous products such as fashion, upholstery, automotives, aerospace, medical textiles, et cetera. Seamless knitting is forecasted to continue growing and could be one of the largest next generation knitting technologies.”). Moreover, a POSITA would understand that the socks and stockings that Choi mentions are types of footwear. EX1022 (The Complete Footwear Dictionary), at 4 (defining footwear as: “*Any foot covering* in the form of shoes, boots, slippers, or *hose* used for utility and/or dress wear. *Not necessarily synonymous with shoes*, which are simply one category of footwear.”); EX1002, ¶121; EX1003 (Delgatty), ¶12. “Hose,” one of the enumerated categories of footwear, is broadly defined to include socks and stockings. EX1022, 5.

Moreover, it would have been desirable and obvious to flat knit a domed, three-dimensional structure in the central portion of Dua-592’s first layer (of either Embodiment #1 or #3) to simplify the assembly process, reduce the waste of

expensive materials, eliminate additional making up operation, and diminish labor cost. EX1002, ¶122. As a specific example, forming the central portion of Dua-592 as a domed, three-dimensional structure would eliminate the need for a toe tip cutout used in Dua-592 because the toe portion would be sufficiently rounded before assembly. *Id.*



Finally, in view of Hong and/or Choi, a POSITA would not only understand that Dua-592's central portion could and should be formed as a domed, three-dimensional structure, but that there would have a reasonable expectation of success in doing so. EX1002, ¶123. For example, as Dr. Adanur states "both Hong and Choi detail the capabilities of known flat knitting machines as including the creation of three-dimensional knit structures, including more complex three-dimensional

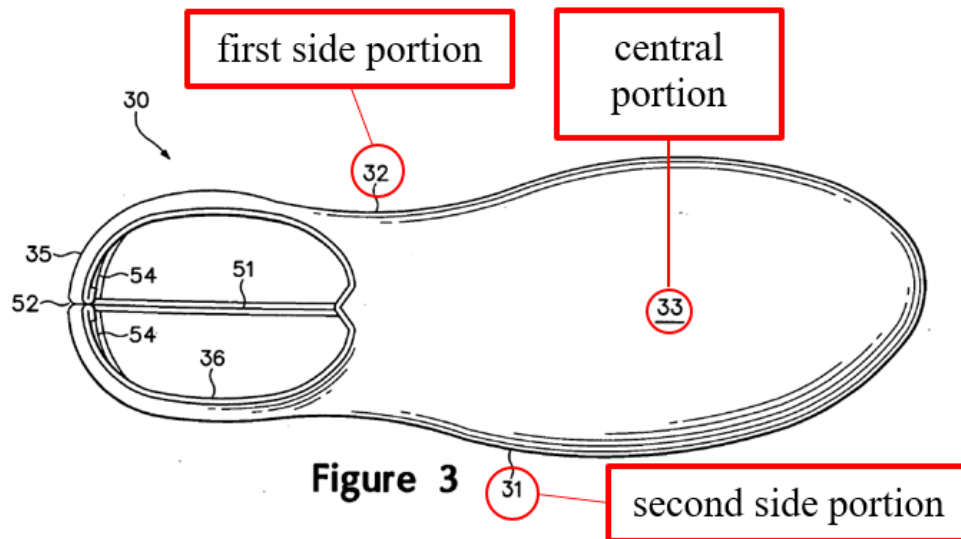
structures than a simple dome-shaped structure as claimed in the '484 patent. *Id.* And, “[b]oth Hong and Choi describe the three-dimensional knitting capabilities of such Shima Seiki machines” *Id.* Moreover, as noted previously, Nike’s expert from the -01460 IPR admitted that “Shima Seiki machines that had the[] capabilities to flat knit three-dimensional structures were available since the 1990s,” and that a POSITA would have been familiar with such machines. EX1020, 26:2-27:15, 19:19-21:7, 26:2-11. Indeed, Nike overcame a rejection of insufficient disclosure during prosecution of the European counterpart application, not by pointing to its own disclosure about how to make domed, three-dimensional structures, but by pointing to Hong and arguing that “[t]here are numerous prior art documents which disclose that achieving three-dimensional knitted textiles may generally be obtained through flat knitting” EX1019, 8.

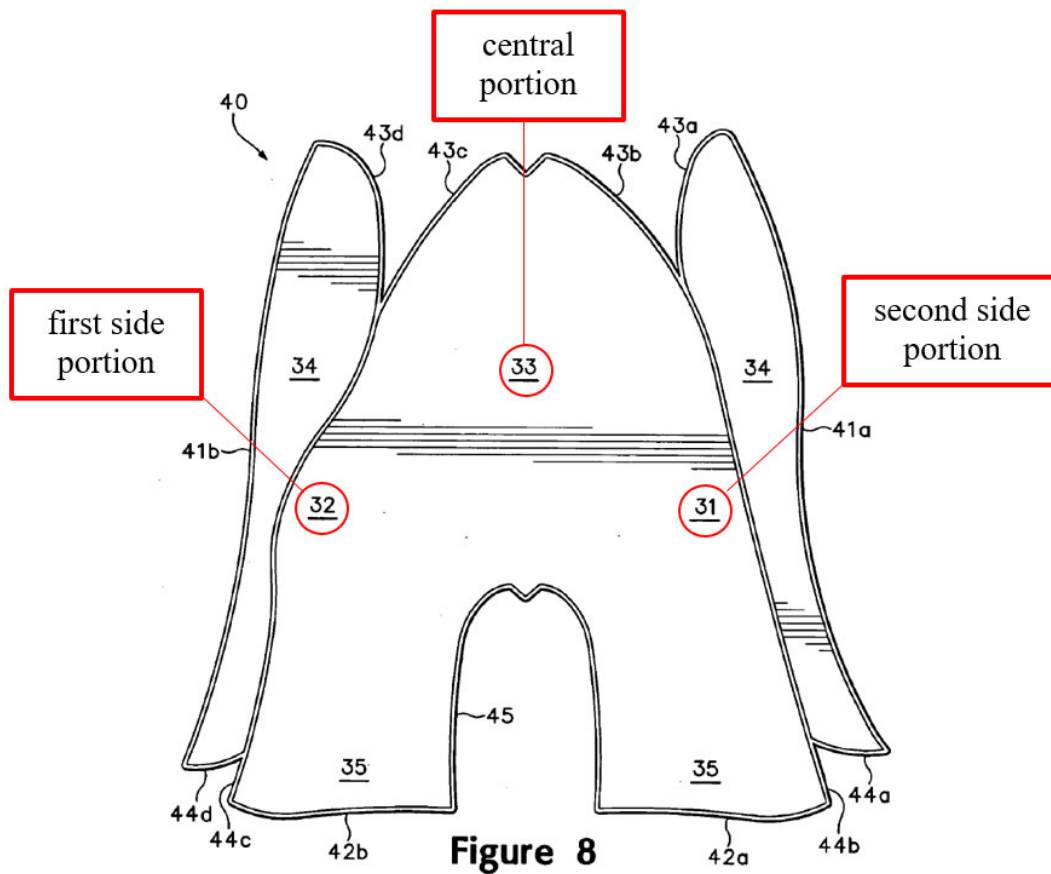
Element 1[c]: *a first side portion being formed of unitary construction with the central portion and extending from a first side of the central portion; and;*

Element 1[d]: *a second side portion being formed of unitary construction with the central portion and extending from a second side opposite the first side of the central portion,*

The flat-knitted element of Dua-592 comprises first and second side portions formed of a unitary construction with the central portion and extending therefrom, as shown below. Specifically, Dua-592 discloses that the upper 30 into which textile

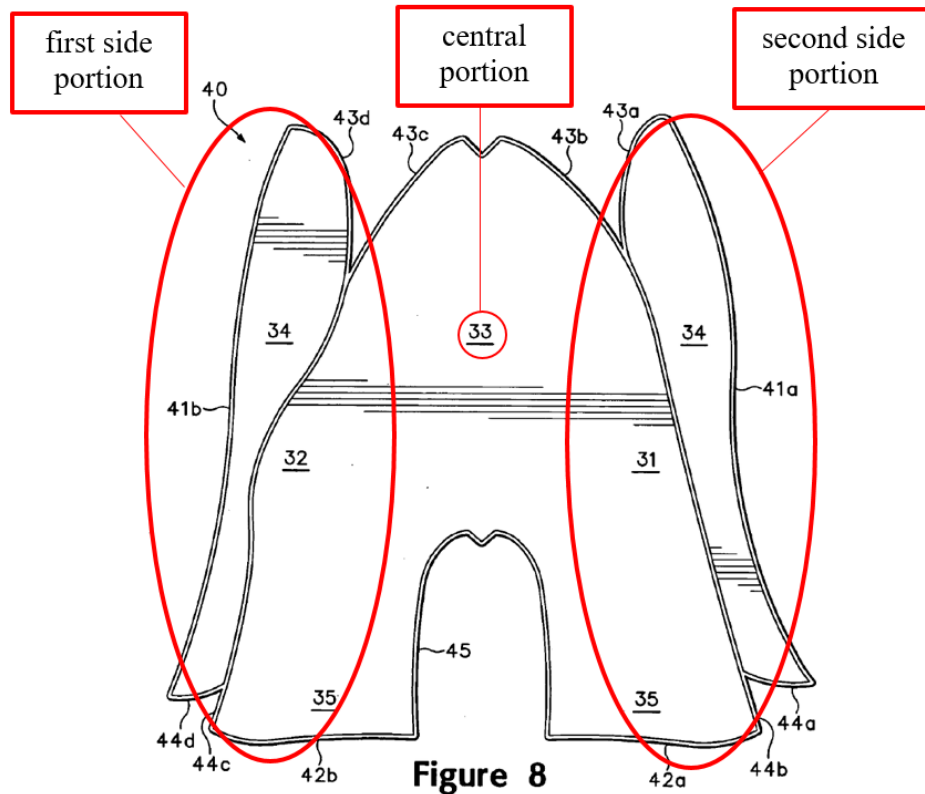
element 40 is formed has “a lateral region 31, an opposite medial region 32, an instep region 33, a lower region 34, and a heel region 35. Lateral region 31 extends through a longitudinal length of footwear 10 and is generally configured to contact and cover a lateral *side* of the foot. Medial region 32 has a similar configuration that generally corresponds with a medial *side* of the foot.” EX1014 (Dua-592), [0036]. Thus, at least the medial region 32 and lateral region 31 are first and second side portions that extend from respective sides of the instep portion 33 (central portion).





EX1014 (Dua-592), FIG. 8 (annotated); *see also* FIG. 11 (Embodiment #3); [0055] (describing Embodiment #3 has having the same “general shape” of Embodiment #1); EX1002, ¶¶125-127.

Alternatively, the medial region 32 and lateral region 31, together with their respective lower regions 34, may similarly comprise the claimed first and second side portions extending from respective sides of the instep portion 33 (central portion). EX1002, ¶128.

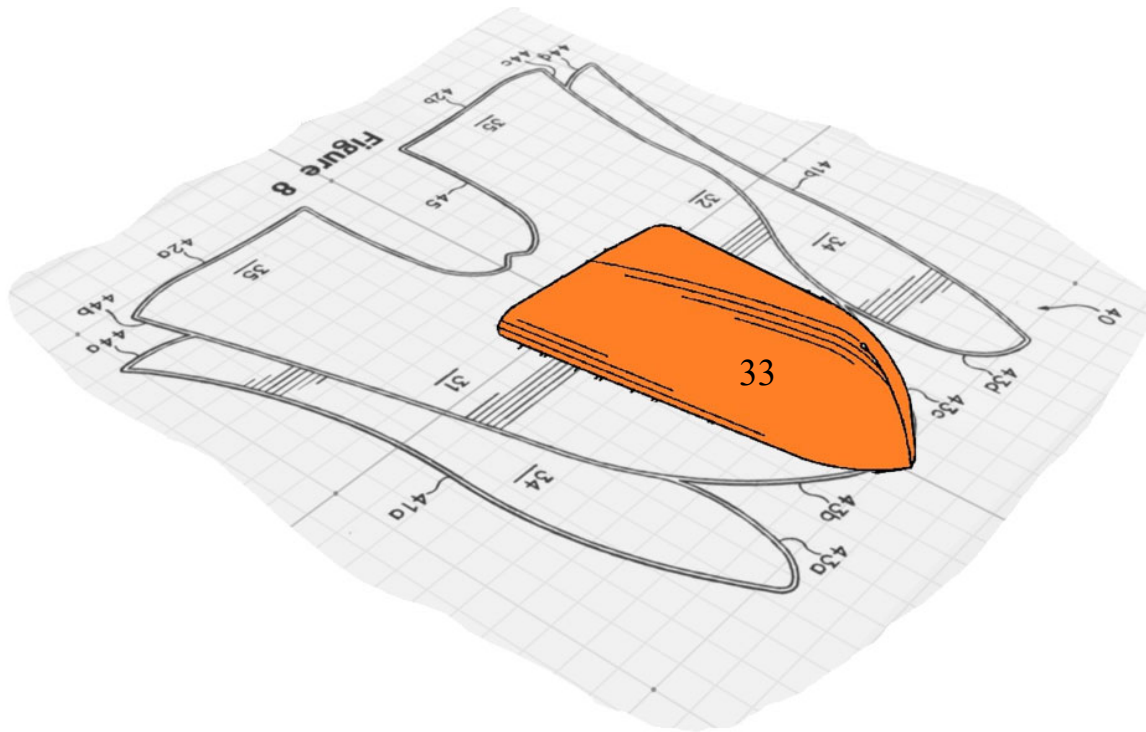


In either alternative for satisfying the claimed first and second side portions, Dua-592 discloses that such side portions are formed of unitary construction with the central portion. EX1014 (Dua-592), [0037] (“Textile element 40 is a single material element that is formed to exhibit a unitary (i.e., one-piece) construction, and textile element 40 is formed or otherwise shaped to extend around the foot.”); [0042] (“the various portions of textile element 40 are formed as an unitary element without seams”); [0043]-[0045]; [0055]-[0056] (describing Embodiment #3 as a “single, unitary element of material” formed using one of a variety of knitting processes); EX1002, ¶129.

Element 1[e]: *the domed, three-dimensional structure shaped to extend above the plane of the first side portion and*

the second side portion when the flat-knitted element is in a flattened configuration.

Element 1[e] is satisfied by Dua-592 in view of Hong and/or Choi for the reasons above under Element 1[b]. Specifically, when Embodiment #1 or #3 of Dua-592's flat-knitted elements is formed in accordance with the teachings of Hong and/or Choi, as it would be have been obvious to do per Element 1[b], the central portion 33 of the textile element would comprise a domed, three-dimensional structure shape that extends above the plane of the first side portion (e.g., medial region side 32) and a second side portion (e.g., lateral region 31) when the textile element is laid in a flattened configuration. *Supra*, Element 1[b]. For example, below is a rendition of FIG. 8 from Dua-592 shown in a three-dimensional orientation after being modified per Hong and/or Choi to have a domed, three-dimensional central portion 33 (orange) consistent with the '484 patent. EX1002, ¶131.



Therefore, Dua-592 in view of Hong and/or Choi render claim 1 obvious.

EX1002, ¶¶132-133.

C. Claim 5

The article of footwear of claim 1, wherein the knitted element defines a void for receiving a foot of a wearer.

Dua-592 discloses “[t]he upper forms a void on the interior of the footwear for receiving the foot,” where “[t]he void has the general shape of the foot, and access to the void is provided by an ankle opening.” EX1014 (Dua-592), [0005], Abstract, [0033] (“Upper 30 is at least partially formed from a textile element 40 that defines an interior void for comfortably receiving a foot and securing a position of the foot relative to sole structure 20.”), [0036], [0039]-[0041]; EX1002, ¶134.

D. Claim 6

The article of footwear of claim 1, wherein the knitted element defines at least a portion of an exterior surface of the upper, and the knitted element defines at least a portion of a void for receiving a foot of a wearer.

With reference to Embodiment #1, Dua-592 teaches with reference to FIGs. 2-7, that “textile element 40 forms both an exterior surface and an interior surface of upper 30.” EX1014 (Dua-592), [0037]. For example, textile element 40 of FIG. 8 is formed into upper 30, as shown in FIG. 2 below. *See id.*, [0038]-[0039]; [0055][[0056] (Embodiment #3).

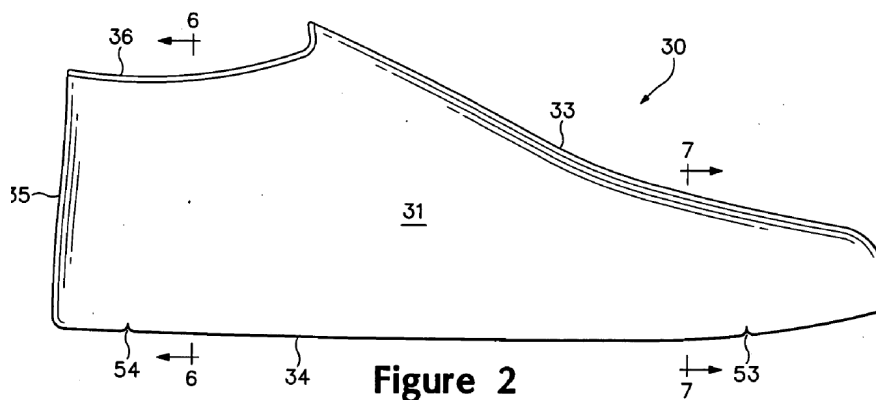
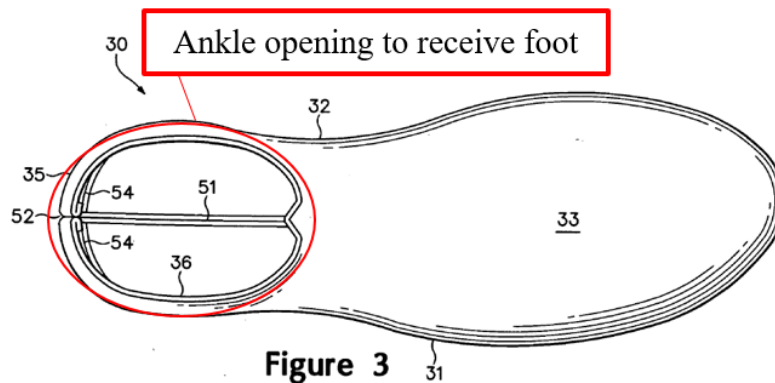
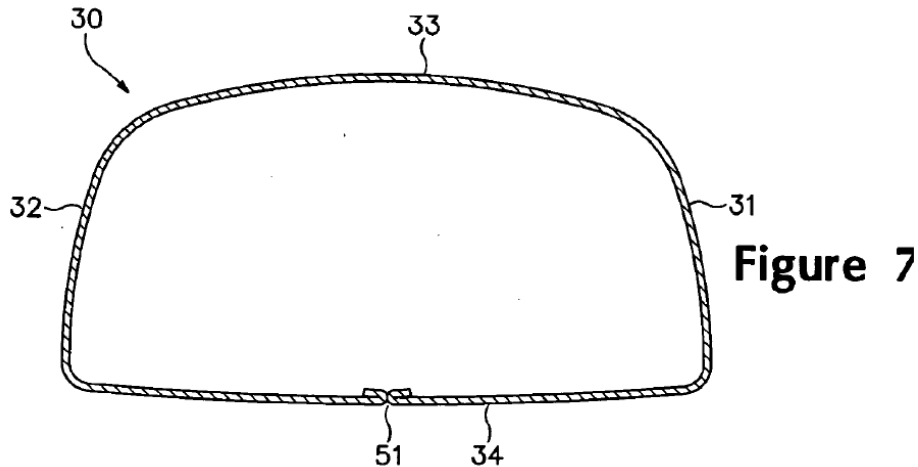


FIG. 7 is a cross-sectional view of upper 30, as defined by section line 7-7 in FIG. 2 above. EX1002, ¶¶136-137.



Thus, Dua-592's textile elements define at least a portion of an exterior surface of the upper. And, as described above, Dua-592's textile elements define at least a portion of a void for receiving a foot of a wearer. *Supra*, Claim 2; EX1002, ¶¶138-139.

E. Claim 7

The article of footwear of claim 1, wherein the knitted element includes a first area and a second area, the first area including a first type of knit structure, and the second area including a second type of knit structure, the first type being different than the second type.

The '484 patent does not use the term "knit structure" outside of claim 7. However, in connection with the only disclosed embodiment having a domed structure, the '484 patent does describe areas of the upper having "different knit types," such as side portions 72 of FIGs. 10A-10C having a "non-ribbed type of

knit” and the central portion 71 being ribbed. EX1001, 10:18-46; EX1002, ¶140. The ’484 patent further discloses that “a ribbed configuration [] stretches to a different degree than the non-ribbed configurations.” EX1001, 7:66-8:3. Thus, in the context of the ’484 patent a POSITA would understand that types of “knit structures” includes at least different types of knit textures, including types of knit textures which stretch to different degrees. EX1002, ¶¶141-142.

Consistent with the ’484 patent’s disclosure, Embodiment #3 of Dua-592 teaches the textile element 40" is comprised of “areas with three different textures,” including a first texture 46", a second texture 47", and a third texture 48", as reflected in FIG. 11 below. EX1014 (Dua-592), [0055]. As shown below, textures 46"-48" are in different areas, including at least a first area and a second area. For example, the areas comprising a first one of texture 46", 47", or 48" would be a first area, while the areas which comprise a second one of texture 46", 47", or 48" would be a second area, per claim 7. EX1002, ¶143.

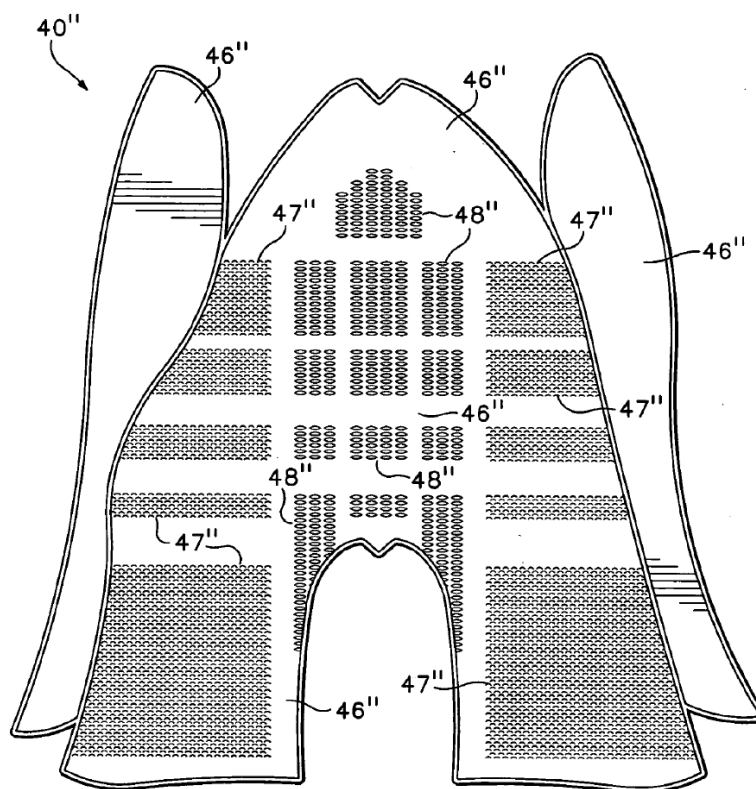


Figure 11

With respect to the properties of the different textured areas, Dua-592 teaches that “[t]extures 46''-48'' may exhibit aesthetic differences, or the differences may be structural. For example, the degree of stretch in areas with textures 46''-48'' may be different, or the wear resistance of the areas may vary depending upon the stitch utilized.” *Id.*, [0055], [0060] (“Similarly, other types of knitting, such as a flat knitting, may be utilized within the scope of the present invention to impart various textures, different properties, or different yarn types to the textile element.”); EX1002, ¶144.

F. Claim 8

The article of footwear of claim 1, wherein the at least one mechanically manipulated yarn includes a first yarn and a different second yarn, the first yarn being located in a first area of the upper, and the second yarn being located in a second area of the upper.

In connection with Embodiment #3, Dua-592 teaches that “the type of yarn utilized in various areas of textile elements 40' and 40" may be changed to impart different properties.” EX1014 (Dua-592), [0056]. For example, Dua-592 provides various examples of yarns, and explains that each type “may impart differing properties to the areas corresponding with textures 46'-47' and 46"-48",” such as by using elastane to impart stretch, wool for insulation, and nylon for durability. *Id.* Because Dua-592 expressly discloses the degree of stretch in areas with textures 46"-48" may be different, a POSITA would understand that it would have been obvious to use yarns with more stretch, such as elastane, for areas which would benefit from more stretch, such as along the instep area where texture 48" is located. EX1002, ¶¶146-147; EX1003 (Delgatty), ¶¶19-21. Similarly, a POSITA would understand that it would have been obvious to use yarns with less stretch but more durability, such as nylon, for areas which would do not require as much stretch but would benefit from more durability, such as such as along the lateral and media sides where texture 47" is located. EX1002, ¶148; EX1003 (Delgatty), ¶¶13-14.

G. Claim 9

The article of footwear of claim 1, wherein the knitted element forms a defined shape having finished edges during the flat knitting process.

According to the '484 patent, flat knitting provides edges of textile elements that “do not need to be finished to prevent unraveling,” unlike textile elements cut from a larger textile element. EX1001, 8:16-26.

Dua-592 similarly discloses flat knitting as a known process for making its textile elements, which would have a defined shape and finished edges. EX1002, ¶151. For example, Dua-592 explains that “the textile element may be removed from the textile structure and incorporated into footwear 10 ... Similarly, other types of knitting, such as a flat knitting, may be utilized within the scope of the present invention to impart various textures, different properties, or different yarn types to the textile element.” EX1014 (Dua-592), [0061]. A POSITA would have understood that, when flat knitted, a knitted element like Dua-592’s would form a defined shape with finished edges during the flat knitting process, as is reflected in the textile elements 40 and 40" of Embodiments #1 and #3. EX1002, ¶¶151-152.

Moreover, when Dua-592’s textile element is knitted in accordance with the flat knit teachings of Hong and/or Choi, as described above with respect to Element 1[b], the textile element would have a defined shape and finished edges. EX1002, ¶153. For example, Hong describes using flat knit machines to “knit fully fashioned

garments” (EX1016, 189), and “knitting to shape.” *Id.*, 190. Similarly, Choi teaches that “[s]eamless knitting, or complete knitting, which produces one entire complete garment without a sewing or linking process” EX1015 (Choi), 5; 12 (“seamless flat V-bed knitting actually creates complete garments, which do not require any kind of cutting or sewing process.”); 14 (“the innovative WHOLEGARMENT® machine that can produce a one-piece three-dimensional complete garment with no stitching, linking or sewing processes.”). Moreover, Choi explains that “‘Seamless’ garment knitting *creates a complete garment* by several different carriers (feeders) with *minimal or no cutting and sewing processes* (Figure 5.3). Thus, seamless knitting has the capability for production time and cost saving by *removing post-knit processes such as the linking or sewing and cutting operation.*” *Id.*, 11.



*Figure 5.3. Complete garment production
by a seamless flat knitting machine*

Id.

A POSITA would understand that such garments would have defined shapes and finished edges, which would continue to be the case when Hong and/or Choi’s knitting techniques are applied to Dua-592’s textile elements. EX1002, ¶154. Moreover, flat knitting such knitted elements was well-known to a POSITA, as

confirmed by the lack of disclosure in the '484 patent regarding how to achieve these features with a flat knitting process. *See id.*

H. Claim 11

Claim 11 is directed to “method of manufacturing an article of footwear,” where the method recites a single step of “forming during a flat-knitting process an upper including a flat-knitted element including a first layer having” the same “central portion,” “first side portion,” and “second side portion” as Claim 1.

Similarly, Dua-592 explains that “[a]n article of footwear and a ***method of manufacturing the article of footwear are disclosed.***” EX1014 (Dua-592), Abstract. Dua-592 broadly indicates that the “discussion and accompanying figures disclose an article of footwear 10 and a ***method of manufacturing footwear 10***, or components thereof, in accordance with the present invention.” *Id.*, [0032]. As described above, Dua-592 discloses that a mechanical flat knitting process can be used to manufacture its textile elements, including the textile elements of Embodiments #1 and #3. *See supra*, Element 1[pre]; EX1002, ¶157. Because that mechanical flat knitting process, in combination with the teachings of Hong and/or Choi, is used to produce textile elements having the “central portion,” “first side portion,” and “second side portion” as Claim 1, Claim 11 is obvious over Dua-592 in view of Hong and/or Choi for the same reasons. *See supra*, Claim 1; EX1002,

¶158. The analysis corresponding to each of elements of Claim 11 is identified in the table below.

Claim	Corresponding Analysis
11[pre]	Element 1[pre]; EX1002, ¶¶156-158.
11[a]	Element 1[a]; EX1002, ¶159.
11[b]	Element 1[b]; EX1002, ¶160.
11[c]	Element 1[c]; EX1002, ¶161.
11[d]	Element 1[d]; EX1002, ¶161.
11[e]	Element 1[e]; EX1002, ¶162.

I. Claim 12

The method recited in claim 11, wherein the flat knitting process includes forming a first area and a second area, a stitch type of the first area being different that a stitch type of the second area.

Dua-592 discloses “an upper incorporating a textile element formed through a weft knitting process” where “the weft knitting process is flat knitting” and “the textile element has a first area and a second area with a unitary construction, the first area being formed of a first stitch type, and the second area being formed of a second stitch type that is different from the first stitch type.” EX1014 (Dua-592), Claim 7, 19; *see also id.*, Claims 20, 30, 66. Dua explains that different textures, aesthetics, degrees of stretch, and degrees of wear resistance are formed by varying the type of stitch. *Id.*, [0055]. Moreover, with respect to Embodiment #3, Dua-592 discloses

“varying the stitch types to form textures 46'-47' and 46''-48'',” which correspond to different areas, including a first area and a second area, as shown in FIG. 11 below.

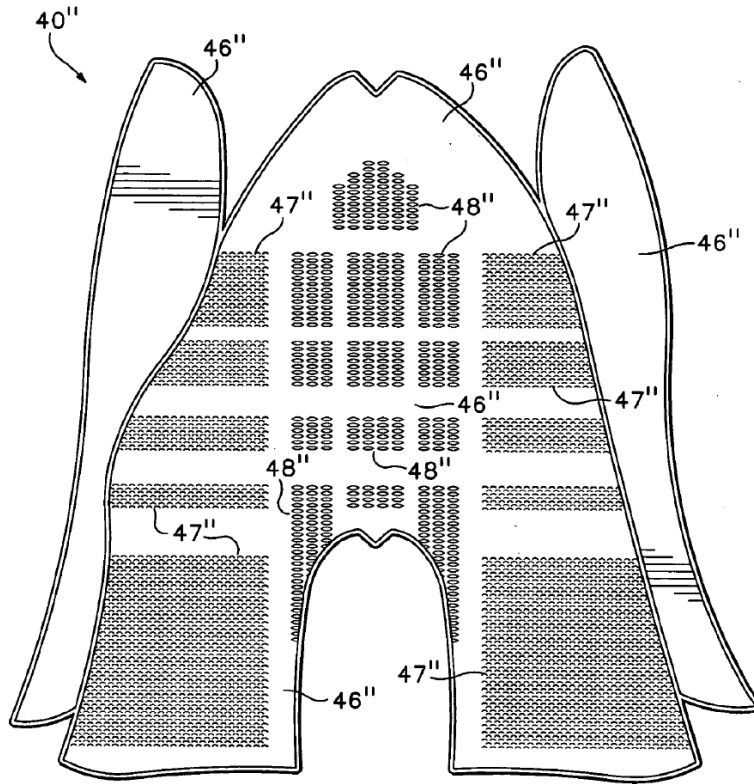


Figure 11

Id., FIG. 11; *see also id.*, [0060]; EX1002, ¶¶163-165.

J. Claim 13

The method recited in claim 11, wherein the flat knitting process includes forming a first area and a second area, a yarn type of the first area being different than a yarn type of the second area.

Claim 13 is substantially similar to claim 8 and is obvious for the same reasons. *See supra*, Claim 8; EX1002, ¶166.

K. Claim 14

The method recited in claim 11, wherein the flat knitting process includes forming a first area and a second area, a stitch type and

a yarn type of the first area being different than a stitch type and a yarn type of the second area.

Dua-592 discloses this limitation for the reasons provided with respect to claims 8 and 12 in this ground. EX1002, ¶167. Moreover, Dua-592 specifically discloses “an upper incorporating a textile element formed through a flat knitting process, the textile element having a first area and a second area with a unitary construction, the first area having a first set of properties, and the second area having a second set of properties that are different from the first set of properties” and “the first set of properties and the second set of properties are at least one of a stitch configuration and a yarn type.” EX1014 (Dua-592), Claims 65-66; EX1002, ¶168.

Moreover, with respect to Embodiment #3, Dua-592 discloses that the various textures, which correspond to different areas in FIG. 11, can be formed by varying **both** stitch type and yarn type: “In addition to varying the stitch types to form textures 46'-47' and 46"-48", the type of yarn utilized in various areas of textile elements 40' and 40" may be changed to impart different properties.” EX1014 (Dua-592), [0056]; EX1002, ¶169.

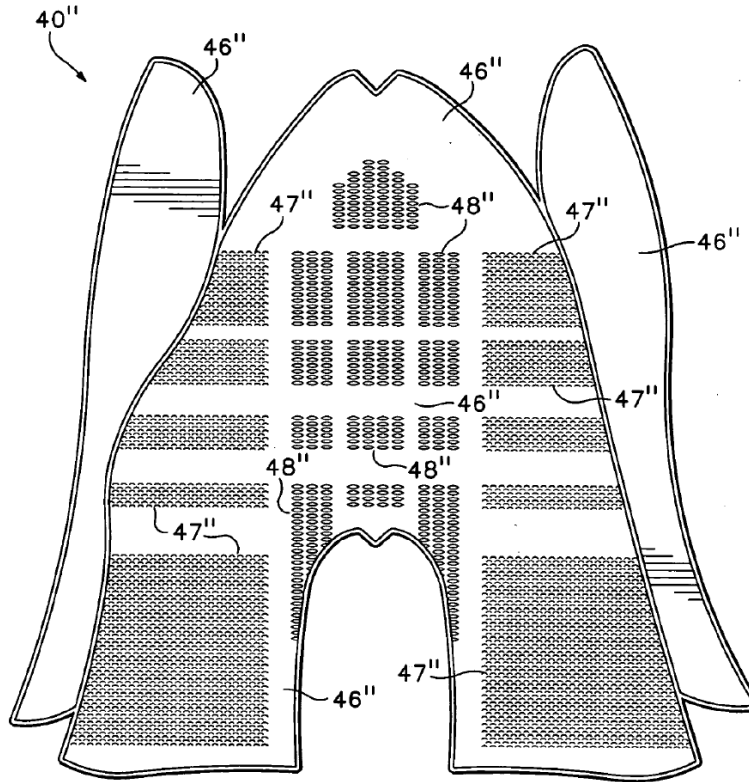


Figure 11

EX1014, FIG. 11; *id.*, [0060]. It would have also been obvious to vary the type of stitch and yarn used at different areas of the upper to give the different areas different characteristics, such as different textures, aesthetics, structures, or wear resistance.

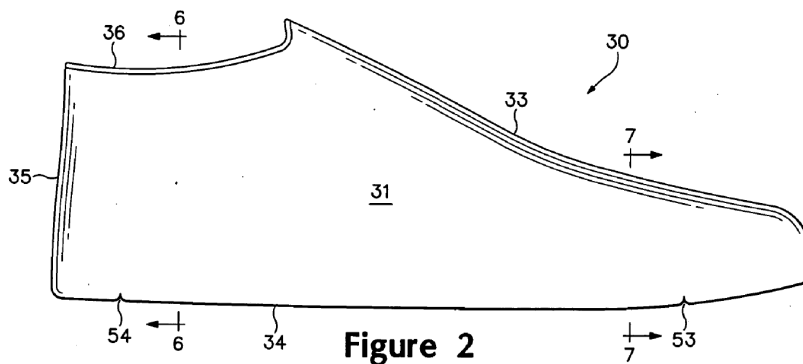
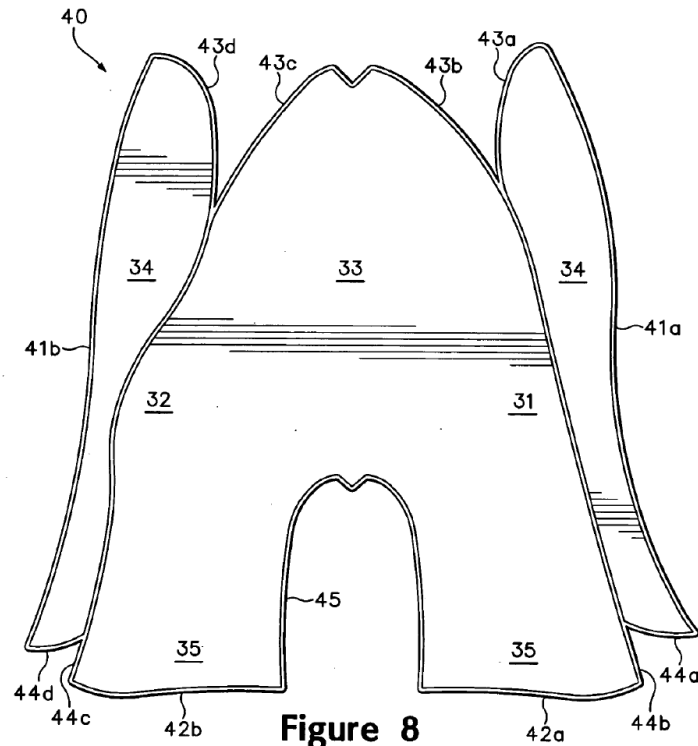
EX1002, ¶¶170-173.

L. Claim 15

The method recited in claim 11, further comprising assembling the flat-knitted element into an article of footwear.

Dua-592 discloses different assembly techniques may be used to prepare upper material for incorporation into footwear. EX1014 (Dua-592), [0012]. Moreover, Dua-592 discloses that “[t]extile element 40 exhibits the general shape depicted in FIG. 8 prior to the formation of seams 51-54” and that “[f]ollowing

formation of seams 51-54, however, textile element 40 exhibits the shape of upper 30 depicted in FIGS. 2-7.” *Id.*, [0038]; *see also id.*, [0039]-[0040]; [0041] (“Following the formation of each of seams 51-54, the manufacturing of upper 30 is essentially complete.”).

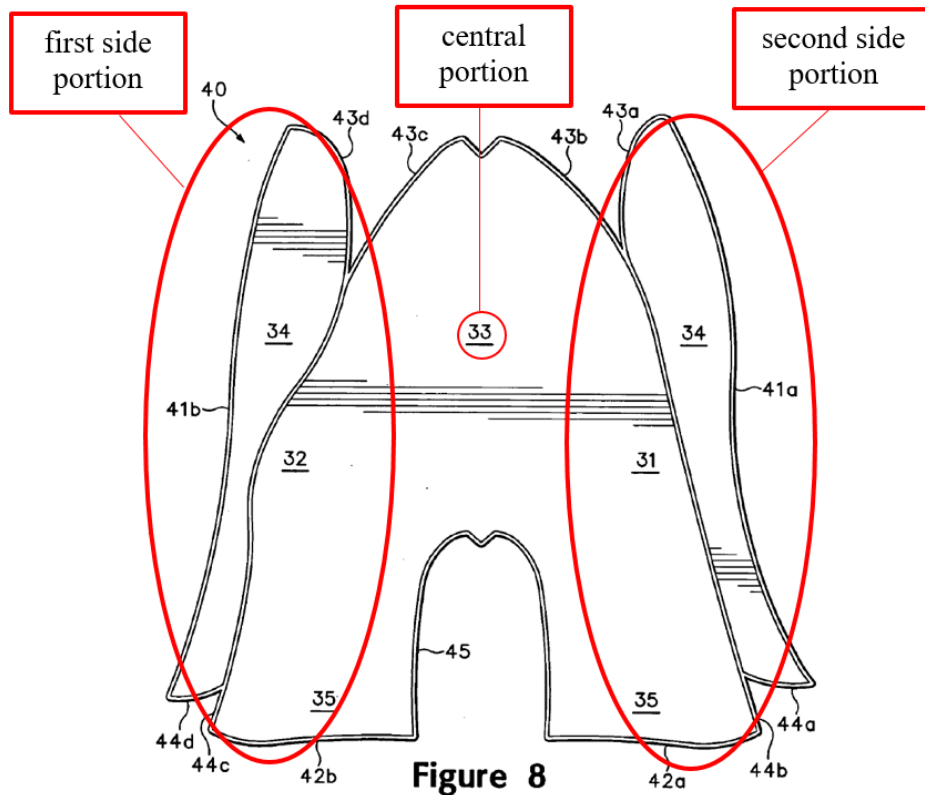


EX1002, ¶174-175.

M. Claim 16

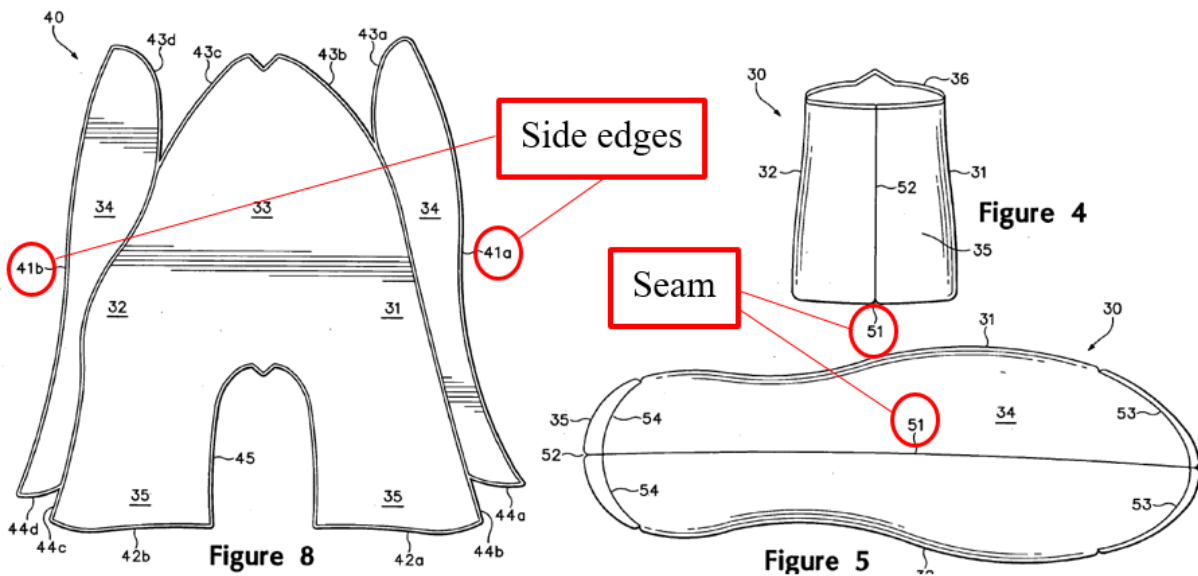
The method recited in claim 15, wherein the assembling includes joining side edges of the first side portion and the second side portion to form a seam extending under a foot and along a longitudinal length of the foot.

As described above, Dua-592's medial region 32 and lateral region 31, together with their respective lower regions 34, may comprise the claimed first and second side portions extending from respective sides of the instep portion 33 (central portion). *See supra*, Element 1[c]-1[d]; EX1002, ¶176.



In describing the assembly of upper 30, Dua-592 explains that “[s]eams 51-54 are formed by securing various edges of textile element 40 together. More specifically, (1) seam 51 is formed by securing an edge 41a with an edge 41b”

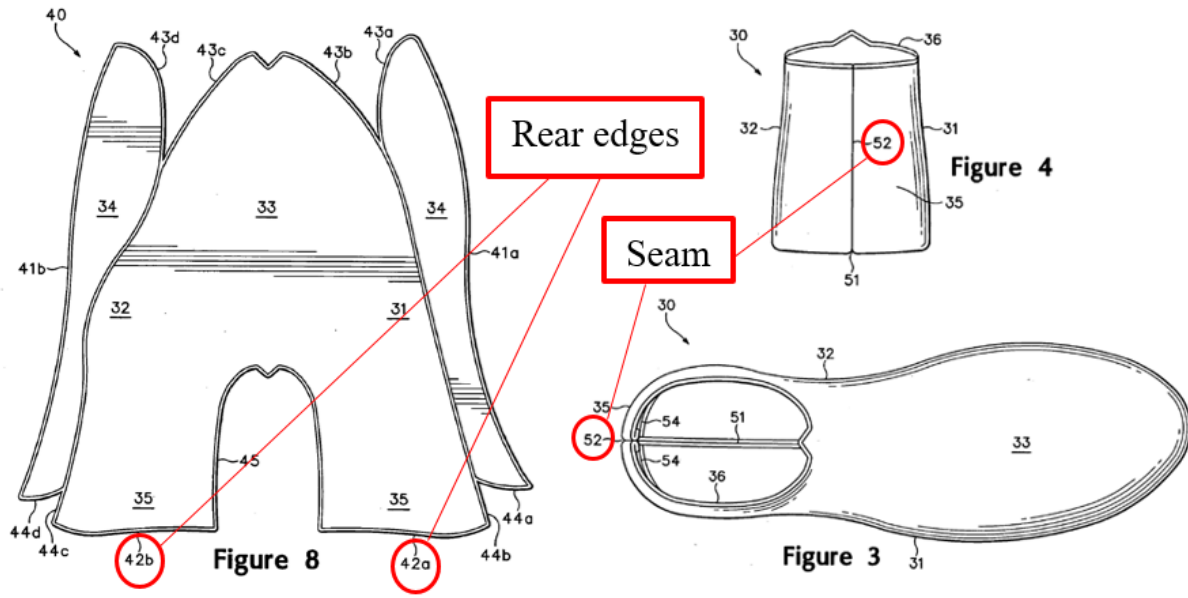
EX1014 (Dua-592), [0038]. Thus, edges 41a-41b would comprise side edges of the first and second side portions, where edges 41a-41b are joined to form seam 51 which extends longitudinally under the foot, as shown below, thereby satisfying claim 16. EX1002, ¶¶177-178.



N. Claim 17

The method recited in claim 15, wherein the assembling includes joining rear edges of the first side portion and the second side portion to form a seam that extends upward along a heel.

Dua-592 discloses that “folding or overlapping of textile element 40 to form seam 51 places edge 42a adjacent to edge 42b, which facilitates the formation of seam 52.... Upon the joining of edges 42a and 42b to form seam 52, the u-shaped area becomes an aperture in textile element 40 and effectively forms ankle opening 36.” EX1014 (Dua-592), [0040].



Thus, edges 42a-42b are rear edges that form seam 52 which extends upward along a heel, thereby satisfying claim 17. EX1002, ¶¶179-180.

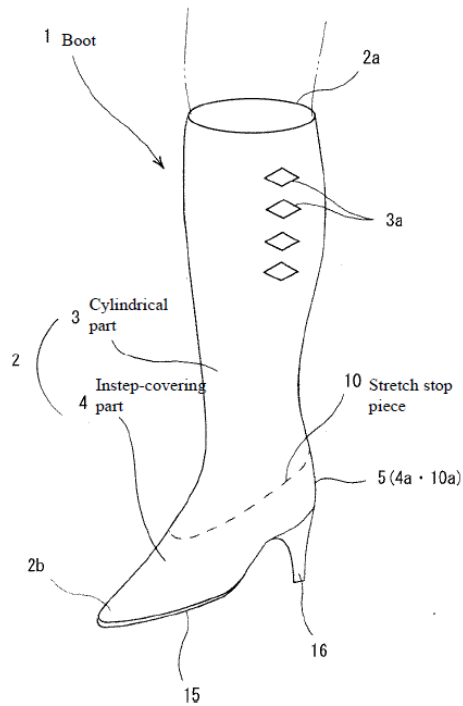
VII. GROUND 2A: CLAIMS 1, 5-9, AND 11-15 ARE OBVIOUS OVER YAMAMOTO IN VIEW OF CHOI

A. Overview of the Prior Art

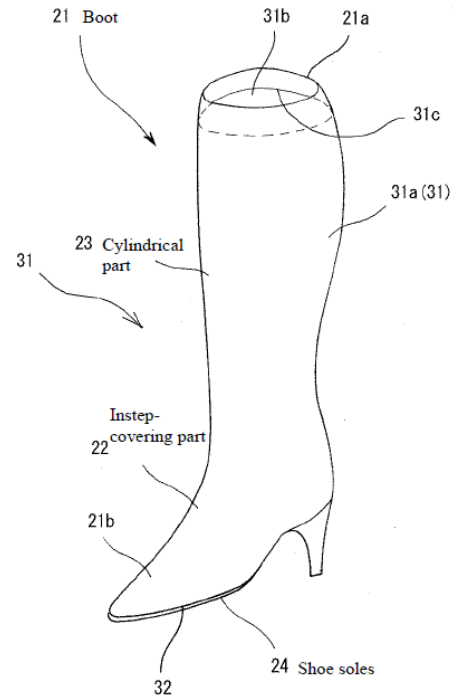
i. Yamamoto

Yamamoto discloses an article of footwear in which “[t]he entire outer surface of boot 1 (excluding the sole) is formed by a single piece of fabric 2 continuously knitted with yarn” EX1017, Abstract.

[FIG. 1]



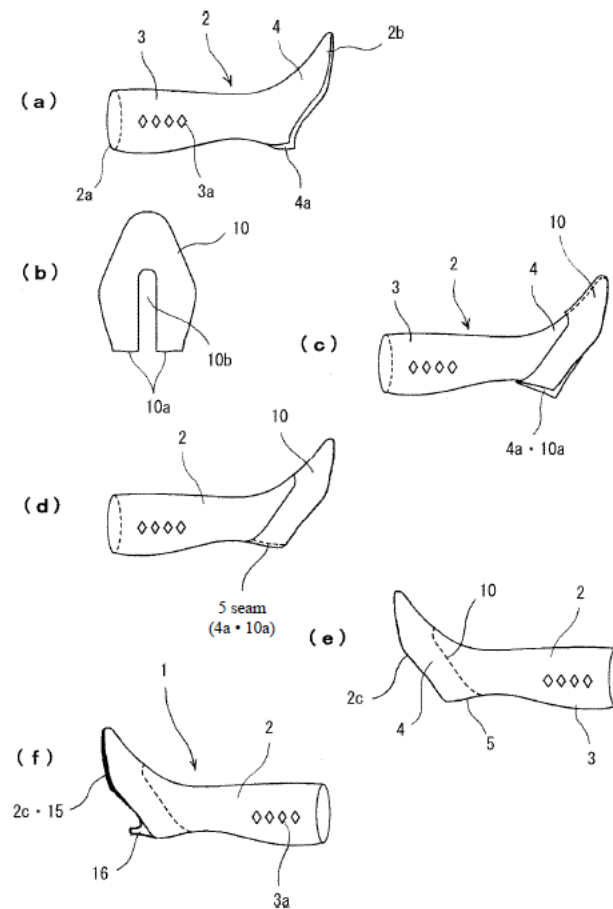
[FIG. 3]



Yamamoto teaches that it is “possible to knit the cylindrical fabric that forms the outer surface of the boot continuously with yarn ... using a flat knitting machine with a **three-dimensional** seamless knitting function called WHOLEGARMENT (registered trademark).” *Id.*, [0011].

Yamamoto uses a “[a] stretch stop piece 10 for determining the shape of the shoe is bonded to the inside of the instep-covering part 4 of the fabric 2.” *Id.*, [0022].

[FIG. 2]



As shown above in, the “stretch stop piece 10 is prepared as a member that covers and defines the shape [of the foot] from the instep of the foot to the back of the heel (FIG. 2(b)),” where the stretch stop piece 10 is affixed to the inner surface by thermal pressing or adhesive to the instep-covering part 4 of the fabric. *Id.*, [0025]-[0026]; *see also* EX1002, ¶¶96-99.

ii. Choi

Choi is described above under Section VI.A.iii.

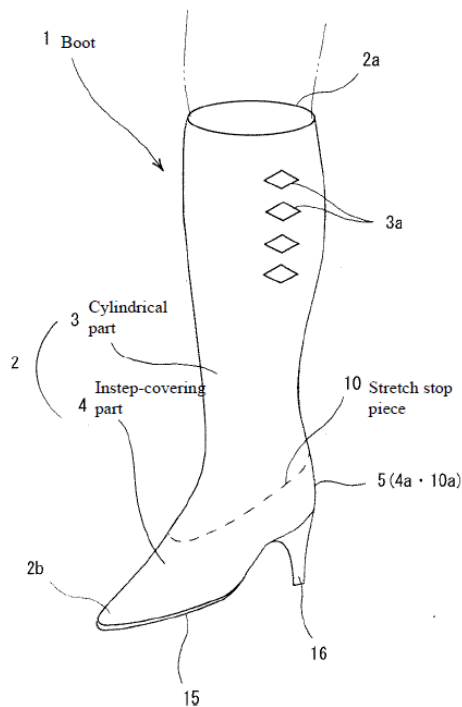
B. Claim 1

Element 1[pre]: *An article of footwear comprising*

Yamamoto is directed to a boot, which is an article of footwear, in which “[t]he entire outer surface of boot 1 (excluding the sole) is formed by a single piece of fabric 2 continuously knitted with yarn” EX1017 (Yamamoto), Abstract; EX1002, ¶¶181-182.

As shown in FIG. 1 below, “boot 1 has a cylindrical part 3 above the ankle and an instep-covering part 4 that covers from the instep of the foot to the back of the heel formed with one piece of stretchable continuous fabric 2, where a sole 15 and heel 16 are attached under the instep-covering part 4.” *Id.*, [0021].

[FIG. 1]

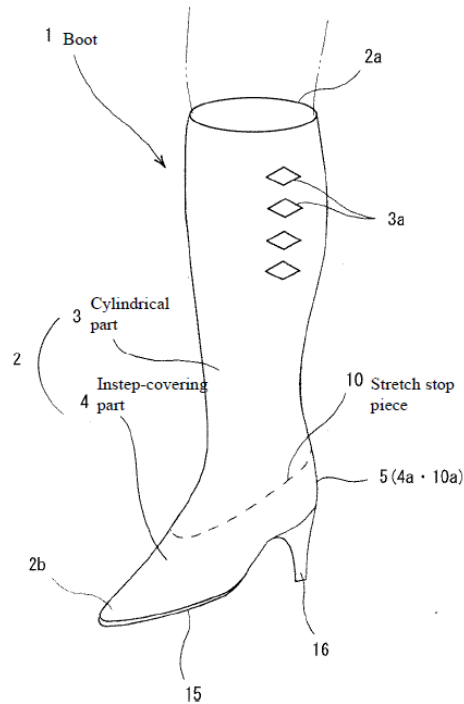


Element 1[a]:

an upper including a flat-knitted element formed from at least one yarn mechanically manipulated in a flat-knitting process, the flat-knitted element including a first layer having:

With respect to FIGs. 1-2, Yamamoto discloses that “[t]he entire outer surface of boot 1 (excluding the sole) is formed by a single piece of fabric 2 continuously knitted with yarn” EX1017 (Yamamoto), Abstract.

[FIG. 1]



Yamamoto teaches that “boot 1 has a cylindrical part 3 above the ankle and an instep-covering part 4 that covers from the instep of the foot to the back of the heel formed with one piece of stretchable continuous fabric 2, where a sole 15 and heel 16 are attached under the instep-covering part 4. The fabric 2 is provided so as to cover the entire outer surface of the boot 1 (other than the sole 15) by itself.” *Id.*, [0021].

Yamamoto also discloses that the flat-knit upper is a “single layer of fabric.” *Id.*, [0012], [0022] (“the fabric is made of only one layer without overlapping.”), [0028].

Further, Yamamoto discloses that it is “possible to knit the cylindrical fabric that forms the outer surface of the boot continuously with yarn ... **using a flat knitting machine** with a three-dimensional seamless knitting function called WHOLEGARMENT (registered trademark).” *Id.*, [0011]. Yamamoto further explains that “a flat knitting machine having a three-dimensional seamless knitting function called WHOLEGARMENT (registered trademark) or the like may be used.... By doing so, the fabric 2 is formed three-dimensionally without sewing, and there is no need to cut the fabric, so no waste material is generated.” *Id.*, [0024].

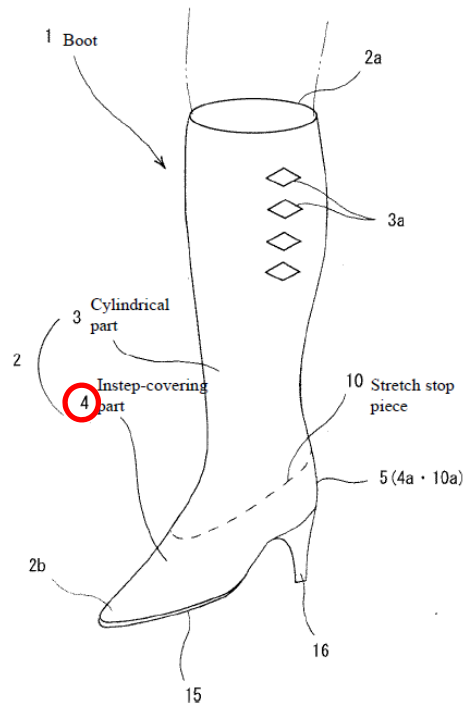
Thus, Yamamoto’s single piece of fabric 2 satisfies the flat-knitted element of Element 1[a]. EX1002, ¶¶183-187.

Element 1[b]: *a central portion having a domed, three-dimensional structure configured for extending over the top of a foot;*

Yamamoto’s boot includes a central portion having a domed, three-dimensional structure extending over the foot in the form of the central portion of instep-covering part 4. EX1017 (Yamamoto), Abstract (“boot 1 (excluding the sole) is formed by a single piece of fabric 2 continuously knitted with yarn, and of this

fabric 2, the *instep-covering part 4 covers at least the tip of the foot and the instep of the foot*”).

[FIG. 1]



While Element 1[e] below requires the flat-knitted element to have the “domed, three-dimensional structure” when “in a flattened configuration,” Element 1[b] contains no such limitation and is therefore satisfied by Yamamoto’s assembled upper 30, as shown above. Moreover, claim 1 is to an “article of footwear,” not an upper, and therefore a POSITA would understand the “central portion” corresponds to a state in which the upper is assembled. EX1002, ¶¶188-189.

In any event, to the extent that the “domed, three-dimensional structure” of the central portion does not correspond to an assembled state of the upper, it would

have been obvious to form Yamamoto's "single piece of fabric 2" with a domed, three-dimensional central portion extending over the top of the foot in view of the express teachings of Choi. EX1002, ¶190.

As detailed above under Ground 1, Choi discloses that three-dimensional shapes could be formed on flat knitting machines without any post sewing or linking process. Specifically, Choi teaches that "[s]eamless knitting, or complete knitting, which produces one entire complete garment without a sewing or linking process" Choi, 5; 12 ("seamless flat V-bed knitting actually creates complete garments, which do not require any kind of cutting or sewing process."); 14 ("the innovative WHOLEGARMENT® machine that can produce a one-piece three-dimensional complete garment with no stitching, linking or sewing processes.").

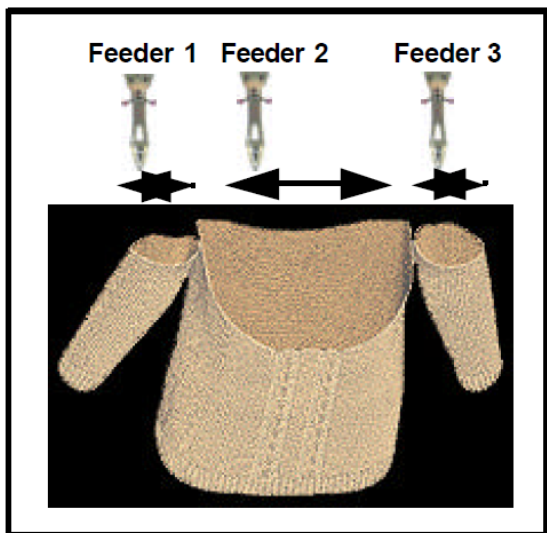


Figure 6.1. Three-dimensional complete garment knitting until underarm point (Shima Seiki)

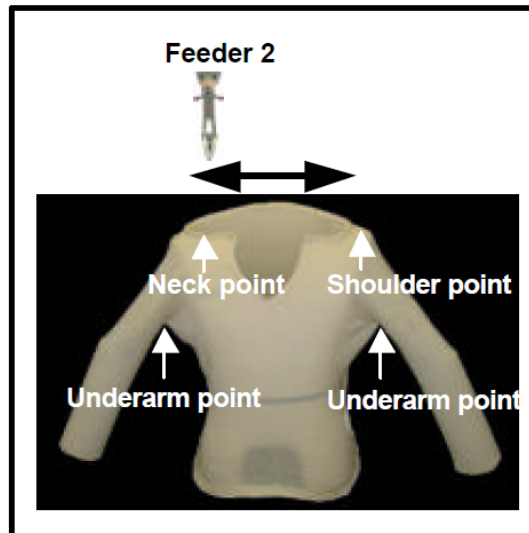


Figure 6.2. Three-dimensional complete garment knitting after underarm point

Id., 13; EX1002, ¶¶177-178.

A POSITA in possession of Yamamoto would have been motivated to look to Choi, which explains that “seamless garment knitting makes it possible not only to create several types of tubular formed knitting but also to build diverse design structures on the tubular knitted garments simultaneously.” *Id.*, 6; EX1002, ¶192. Moreover, a POSITA would understand that Choi’s three-dimensional flat knitting teachings can be used in a wide variety of applications, including footwear. EX1002, ¶192; EX1015 (Choi), 7 (“Seamless garment knitting on the V-bed machine has primarily been used for apparel. However, in recent years, this new three-dimensional knitting technique has been extended in other areas such as fashion, upholstery, industrial, automotive, and medical textiles.”); *Id.*, (“A diverse range of seam-free products can be created such as hand gloves, hats, *socks*, and sweaters according to the machine gauge and types of machine.”). Choi teaches that it is possible to seamlessly knit various three-dimensional structures, including not only “hand gloves, hats, socks, and sweaters,” but also three-dimensional upholstery (e.g., office chairs), car seats, and medical textiles (e.g., orthopedic supports, compression stockings, etc.). *Id.*, 7-8.

A POSITA would have been particularly motivated to apply Choi’s teachings with respect to Shima Seiki’s WholeGarment® machine to produce the single piece fabric 2 of Yamamoto because Yamamoto specifically discloses that its knit boot fabric can be formed “using a flat knitting machine with a three-dimensional

seamless knitting function called WHOLEGARMENT (registered trademark).” EX1017 (Yamamoto), [0011], [0024]; EX1002, ¶193. A POSITA would also have been motivated to apply Choi’s teachings because Choi’s seamless knitting results in “savings in cost and time, higher productivity, quick response production and other advantages.” EX1015 (Choi), 5; EX1002, ¶193. Choi specifically touts seamless knitting technology as “eliminat[ing] post labor work, which saves production time and cost.” EX1015 (Choi), 1. In the context of Yamamoto’s footwear, a POSITA would also have been motivated to use Choi’s seamless WholeGarment® knitting machine because “the technology offers knitwear consumers more comfort and better fit by eliminating seams.” *Id.*; EX1002, ¶193. A POSITA would have recognized additional benefits, including minimizing the “risk of defects and damages” and allowing designers to “create design structures and patterns across the entire garment.” EX1002, ¶194 (citing Choi at 5-6). The application of Choi’s seamless knitting technology to shoes was obvious, particularly in light of the recognized broad applicability of three-dimensional seamless knitting, including to socks and compression stockings, as noted above. *See also*, EX1015 (Choi), 29 (“Three-dimensional seamless knitting with its diverse capabilities can be applied to numerous products such as fashion, upholstery, automotives, aerospace, medical textiles, et cetera. Seamless knitting is forecasted

to continue growing and could be one of the largest next generation knitting technologies.”).

Accordingly, in view of Choi, a POSITA would understand that at least the central portion of Yamamoto’s instep-covering part 4 could be formed as a domed, three-dimensional structure, and would have a reasonable expectation in doing so. EX1002, ¶195. And it would have been desirable and obvious to flat knit a domed, three-dimensional structure in the central portion of Yamamoto’s instep-covering part 4 to simplify the assembly process, reduce the waste of expensive materials, eliminate additional making up operation, and diminish labor cost. EX1002, ¶¶196-197. As a specific example, forming the central portion of Yamamoto’s boot as a domed, three-dimensional structure would eliminate the need for Yamamoto’s stretch stop piece 10, which Yamamoto bonds to the instep-covering part 4 to help define the shape of the upper. EX1017 (Yamamoto), [0022], [0026]; EX1002, ¶198. The fact that Choi discloses that seamless three-dimensional knitting machines are capable of producing three-dimensional upholstery (e.g., office chairs), car seats, and medical textiles (e.g., orthopedic supports, compression stockings, etc.) without mention of needing additional shape-retentive structures (EX1015, 7-8) would be understood by a POSITA to mean that such knitting machines are similarly capable of producing a simple dome-shaped shoe upper without the need for additional supporting structures. EX1002, ¶198. For example, Choi details the capabilities of

known flat knitting machines as including the creation of three-dimensional knit structures, including more complex three-dimensional structures than a simple dome-shaped structure as claimed in the '484 patent. Indeed, Nike overcame a rejection of insufficient disclosure during prosecution of the European counterpart application, not by pointing to disclosure in its own application explaining how to make domed, three-dimensional structures, but by arguing that “[t]here are numerous prior art documents which disclose that achieving three-dimensional knitted textiles may generally be obtained through flat knitting” EX1019, 8. Thus, a POSITA would expect to beneficially eliminate the need for the additional stretch stop piece 10 by forming the central portion of Yamamoto’s instep-covering part 4 to have a domed, three-dimensional structure. EX1002, ¶¶198-199.

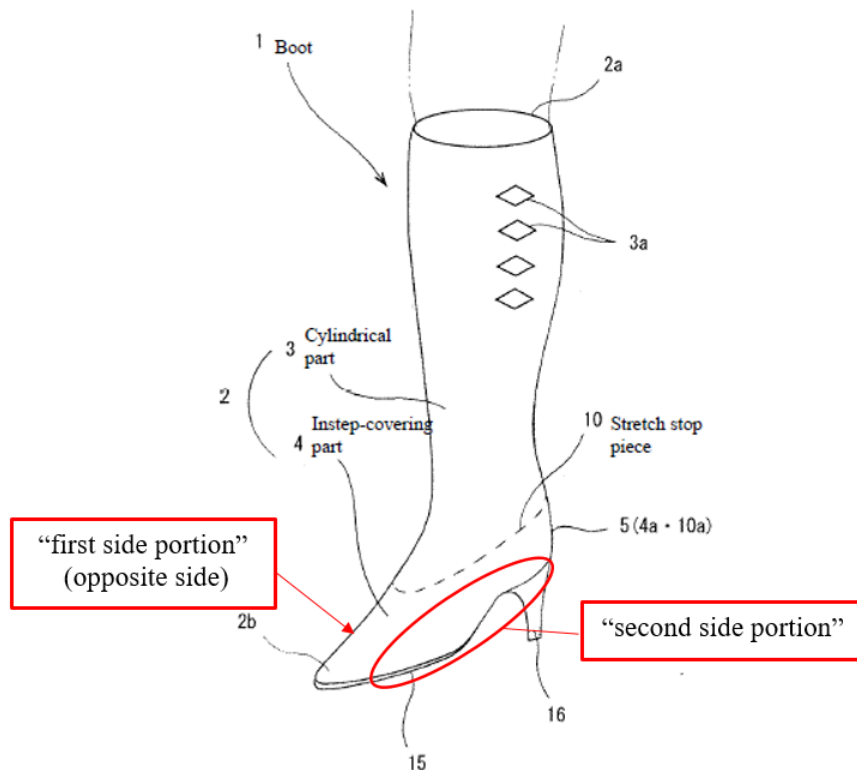
In sum, a POSITA would have had a reasonable expectation of success of creating a dome-shaped version of at least the central portion of Yamamoto’s instep-covering part 4, and would have been motivated to do so for the reasons above, including to eliminate the need for Yamamoto’s stretch stop piece 10, which would beneficially reduce cost and complexity by removing the need for the extra piece and the thermal bonding or adhesive required to attach the piece. EX1002, ¶200; Yamamoto, [0026].

Element 1[c]: *a first side portion being formed of unitary construction with the central portion and extending from a first side of the central portion; and;*

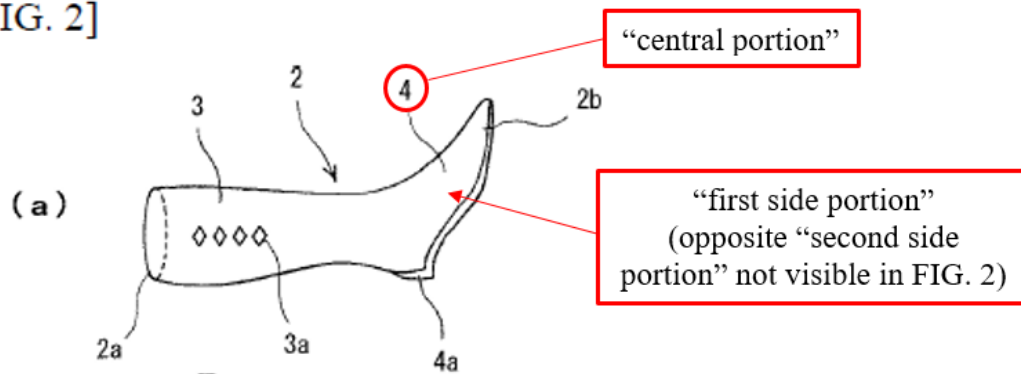
Element 1[d]: *a second side portion being formed of unitary construction with the central portion and extending from a second side opposite the first side of the central portion,*

The flat-knitted fabric 2 of Yamamoto (textile element) comprises first and second side portions formed of a unitary construction with the central portion (central portion of instep-covering portion 4) and extending therefrom, as shown below in FIGs. 1-2. EX1002, ¶202.

[FIG. 1]



[FIG. 2]



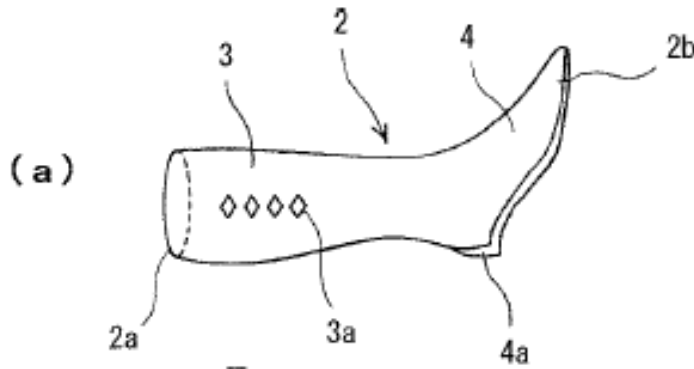
While Yamamoto does not separately label the central and side portions of its instep-covering portion 4, a POSITA would understand that Yamamoto's upper, like any typical shoe upper, would comprise a medial and a lateral side, each of which is connected to a central portion covering the top of the foot. EX1002, ¶203.

Element 1[e]: *the domed, three-dimensional structure shaped to extend above the plane of the first side portion and the second side portion when the flat-knitted element is in a flattened configuration.*

Element 1[e] is satisfied by Yamamoto in view of Choi for the reasons above under Element 1[b]. Specifically, when Yamamoto's textile element (fabric 2) is formed in accordance with the teachings of Choi, as it would have been obvious to do as described under Element 1[b], the central portion of the instep-covering part 4 extending over the top of the foot would comprise a domed, three-dimensional structure shape that extends above the plane of the first and second side portions (e.g., medial and lateral portions) when the textile element (fabric 2) is laid in a flattened configuration. *Supra*, Element 1[b]. For example, with reference to FIG. 2(a) below, Yamamoto discloses that "[t]he instep-covering part 4 is an area below

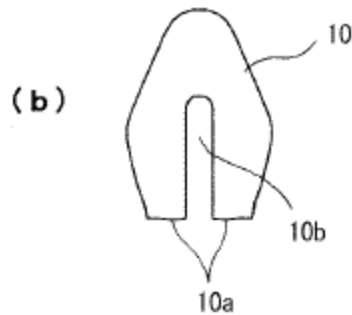
the ankle, but by creating a cut line 4a at the back of the heel and discontinuing between the left and right sides, it is knitted into a planar shape (one piece is folded back at the toe) rather than a cylindrical shape.” EX1017 (Yamamoto), [0024].

[FIG. 2]



With there being a cut 4a along the bottom and heel regions, when the instep-covering portion 4 is placed in a similar orientation to that of the now-eliminated stretch stop piece 10 shown in FIG. 2(b) below, *i.e.*, in a flattened configuration with the medial and lateral sides extending outward from the central portion of the instep-covering portion 4, the medial and lateral sides of the instep-covering portion 4 would lie in the “planar shape” described in Yamamoto. *Id.*, [0024].⁴

⁴ The proposed combination does not change the fact that Yamamoto’s upper is knitted with an open bottom and heel area, as shown in FIG. 2(a). *See infra*, Ground 2B.



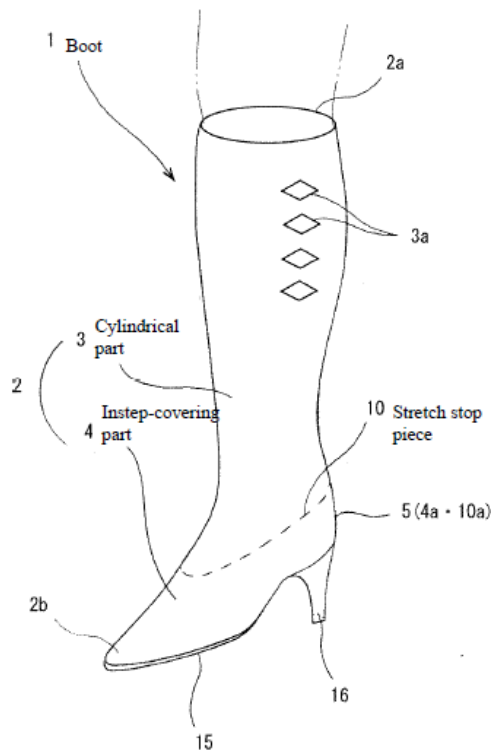
And because the central portion is formed with a domed, three-dimensional structure per Choi as described under Element 1[b], that central portion would extend above the plane of the medial and lateral sides which remain in the “planar shape.” EX1002, ¶¶204-207.

Therefore, Yamamoto in view of Choi renders claim 1 obvious.

C. Claim 5

Yamamoto’s fabric 2 (flat-knitted element) is “formed to cover the foot by a single layer of fabric” EX1017 (Yamamoto), [0012]; [0013] (describing the “fabric that covers the foot is made of a single piece of fabric continuously knitted with yarn). Yamamoto’s fabric 2 is comprised of the cylindrical part 3 which defines a void for receiving and accommodating at least a portion of the leg, and the instep-covering portion 4 which defines a void for receiving and accommodating a foot. EX1002, ¶209.

[FIG. 1]



D. Claim 6

Yamamoto teaches its boot 1 is made of a “single layer of fabric” in the form of fabric 2. EX1017 (Yamamoto), [0012], [0022] (“the fabric is made of only one layer without overlapping.”), [0028]. Thus, as a single layer of knitting, fabric 2 (a flat-knitted element) would define both the exterior surface of the boot 1 and at least a portion of a void for receiving a foot of a wearer. *Supra*, Claim 5; EX1002, ¶¶211-212.

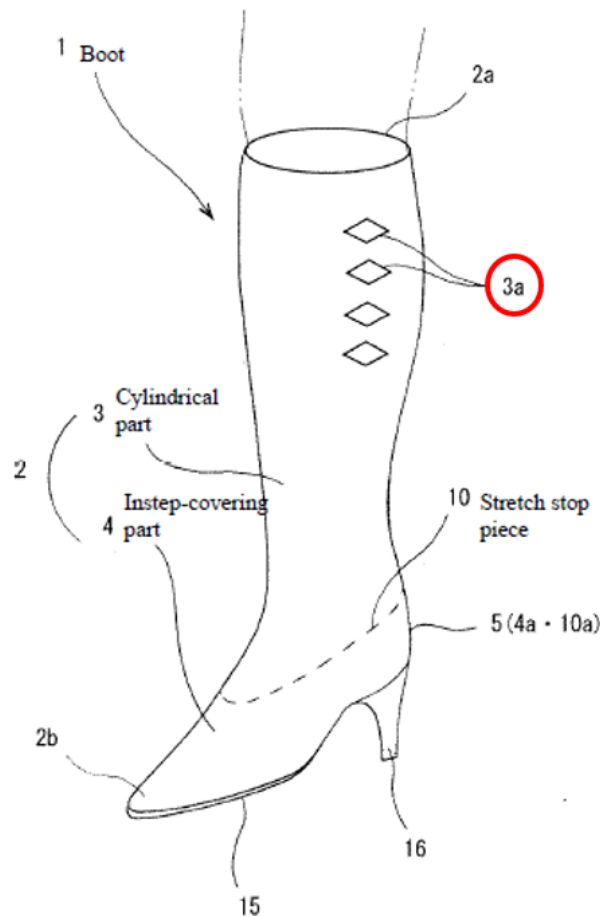
E. Claim 7

The '484 patent does not use the term “knit structure” outside of claim 7. However, in connection with the only disclosed embodiment having a domed

structure, the '484 patent does describe areas of the upper having “different knit types,” such as side portions 72 of FIGs. 10A-10C having a “non-ribbed type of knit” and the central portion 71 being ribbed. EX1001, 10:18-46. The '484 patent further discloses that “a ribbed configuration [] stretches to a different degree than the non-ribbed configurations.” *Id.*, 7:66-8:3. Thus, in the context of the '484 patent a POSITA would understand that types of “knit structures” correspond to different types of knit textures. EX1002, ¶¶213-215.

Consistent with the '484 patent's disclosure, Yamamoto discloses that a “lace-like mesh can also be added to any desired area to create a cool feeling.” EX1017 (Yamamoto), [0019]. Such a “lace-like mesh,” an example of which is lace-like mesh 3a highlighted below, would be a different type of knit structure than non-laced portions of Yamamoto's upper. EX1002, ¶216.

[FIG. 1]



Yamamoto further explains that “it is easy to create a cool feeling by adding a lace-like mesh to any location, etc., and it is possible to further enhance fashionability and improve breathability.” *Id.*, [0013]. When doing so, a POSITA would understand that a “first area” of the fabric 2 (flat-knitted element) which corresponds to the lace-like mesh would have a different knit structure from a “second area” of the fabric 2 (flat-knitted element) which does not correspond to the lace-like mesh. EX1002, ¶217.

Moreover, Yamamoto discloses that “is also possible to create knitting patterns on the fabric.” EX1017 (Yamamoto), [0011]. Specifically, “the shape and dimensions of the boot 1, the material and thickness of the fabric 2 (including the pantyhose type), the form of the mesh 3a (including the pattern and roughness), etc. are not limited to the examples shown.” *Id.*, [0022]. To that end, Choi discloses that “[t]hrough computerized flat bed knitting, more variety of knit patterns and structures can be created and designs can be instantly and efficiently changed through a computer-aided design.” EX1015 (Choi), 6. In particular, “Shima Seiki created a large pattern structure database of knitted parts” such that “[k]nit and garment designs can be easily changed at will.” *Id.*, 18. *See below.*

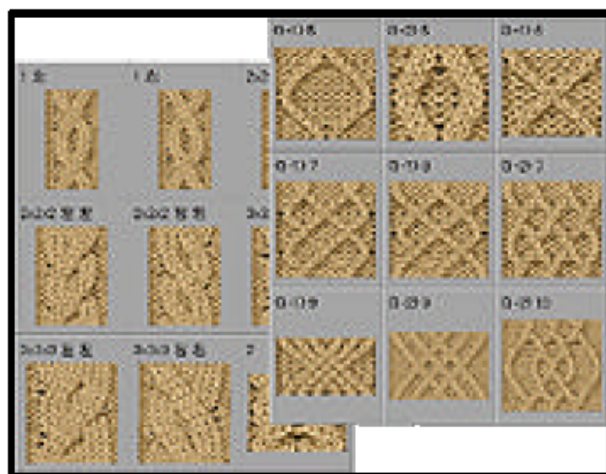


Figure 7.1.2e.
Structure
pattern
database

Id.; 12 (“various structures such as plain, rib, and purl can be created within the seamless garment at the same time.”). Therefore, when constructing Yamamoto’s boot using Shima Seki’s WholeGarment® machine, per Element 1[b], it would have

been obvious to incorporate different knit structures on different areas of Yamamoto's boot, such as the different knit structures stored in Shima Seiki's database. EX1002, ¶¶218-219. This would have been simple to do, as Choi explains, and would have added to the aesthetics of the boot, which is something Yamamoto expressly describes as desirable. EX1017 (Yamamoto), [0013] (discussing "adding a lace-like mesh to any location ... to further *enhance fashionability* and improve breathability."); [0019] ("is possible to make boot that is both economical and *fashionable*."); [0015] ("[the boots] can provide a smooth silhouette and are *fashionable*"); EX1002, ¶¶219-220.

F. Claim 8

Yamamoto expressly discloses that "it is also possible to knit a single piece of fabric continuously while *forming part of the fabric with different yarn*, such as by joining the yarn in the middle." EX1017 (Yamamoto), [0011]. Similarly, Yamamoto discloses that "by doubling the part that covers the foot to increase heat retention and strength, and *knitting different yarns on the inside and outside*, it is possible to make boot that is both economical and fashionable." *Id.*, [0019].

Similarly, one aspect of Yamamoto is to use a yarn containing fibers woven with deodorizing particles. *See e.g., id.*, [0008], [0010], [0019]. However, Yamamoto teaches that not all areas of the upper have such a yarn type. *See e.g., id.*, [0022] ("[I]t is also a good idea to use fibers with deodorizing functions such as

bincho charcoal, sulfur, germanium ore, etc. woven into them. Furthermore, it is also possible to use yarn made of such fibers not for the entire fabric 2 but for a portion thereof (for example, only the portion covering from the tip of the foot to the instep of the foot.); [0015] (“This is because it is possible to reduce the amount of the special yarn having the minute particles used, and the outer portion can also be formed by knitting another yarn with a nice appearance (for example, one with lamé [fabrication]).”).

Thus, Yamamoto satisfies Claim 8 at least because it discloses using a “first yarn” having particles with fibers having a deodorizing function in some areas of the upper, *e.g.*, from the tip of the foot to the instep of the foot (a first area), but that a “second yarn” without such fibers should be used in other areas of the upper (a second area). EX1002, ¶¶221-223

G. Claim 9

According to the '484 patent, flat knitting provides edges of textile elements that “do not need to be finished to prevent unraveling,” unlike textile elements cut from a larger textile element. EX1001, 8:16-26.

Yamamoto similarly discloses flat knitting as a known process for making its boot, which would have a defined shape and finished edges, particularly when knitted in accordance with the flat knit teachings of Choi, as described above with respect to Element 1[b]. EX1002, ¶225. For example, Choi teaches that “[s]eamless

knitting, or complete knitting, which produces one entire complete garment without a sewing or linking process” EX1015 (Choi), 5; 12 (“seamless flat V-bed knitting actually creates complete garments, which do not require any kind of cutting or sewing process.”); 14 (“the innovative WHOLEGARMENT® machine that can produce a one-piece three-dimensional complete garment with no stitching, linking or sewing processes.”). Moreover, Choi explains that “‘Seamless’ garment knitting *creates a complete garment* by several different carriers (feeders) with *minimal or no cutting and sewing processes* (Figure 5.3). Thus, seamless knitting has the capability for production time and cost saving by *removing post-knit processes such as the linking or sewing and cutting operation.*” *Id.*, 11.



*Figure 5.3. Complete garment production
by a seamless flat knitting machine*

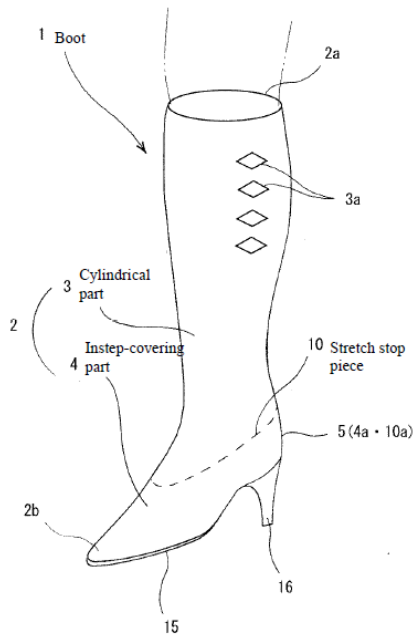
Id. A POSITA would understand that such garments would have defined shapes and finished edges, which would continue to be the case when Choi’s knitting techniques are applied to Yamamoto’s knitted upper (fabric 2). EX1002, ¶¶225-227. Moreover, flat knitting such knitted elements was well-known to a POSITA, as confirmed by the lack of disclosure in the ’484 patent regarding how to achieve these features with a flat knitting process. *Id.*

H. Claim 11

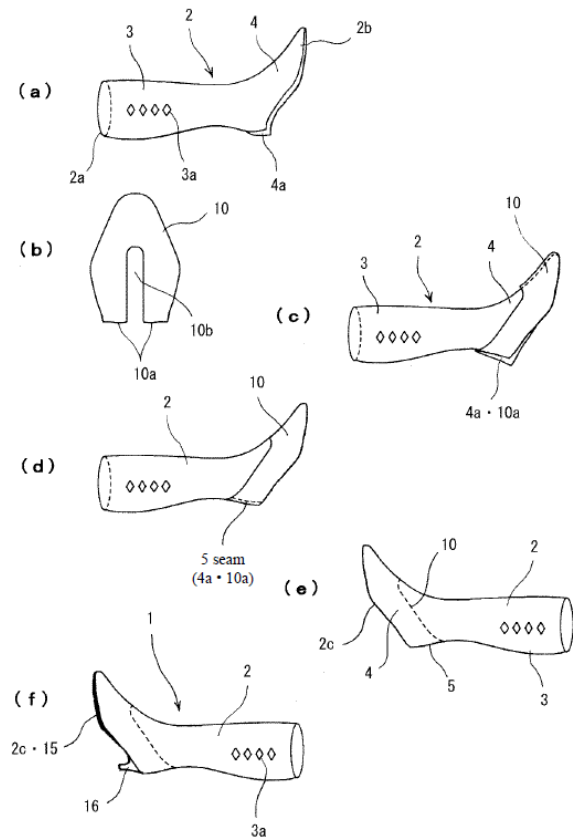
Claim 11 is directed to “method of manufacturing an article of footwear,” where the method recites a single step of “forming during a flat-knitting process an upper including a flat-knitted element including a first layer having” the same “central portion,” “first side portion,” and “second side portion” as Claim 1.

Similarly, Yamamoto explains that “boot 1 shown in FIG. 1 can be manufactured according to the following steps 1) to 6) shown in FIG. 2.” EX1017 (Yamamoto), [0023]; [0020] (“FIG. 1 is a perspective view of a boot 1 (stretch boot), and FIGS. 2(a) to 2(f) are explanatory diagrams regarding a method of manufacturing the boot 1.”).

[FIG. 1]



[FIG. 2]



As described above, Yamamoto discloses that a “flat knitting machine having a three-dimensional seamless knitting function called WHOLEGARMENT” can be used to manufacture the fabric 2 forming the upper of boot 1. *See supra*, Element 1[pre]. Because that mechanical flat knitting process, in combination with the teachings of Choi, is used to produce knitted textile elements having the “central portion,” “first side portion,” and “second side portion” as Claim 1, Claim 11 is obvious in light of Yamamoto and Choi for the same reasons. *See supra*, Claim 1.

The analysis corresponding to each of elements of Claim 11 is identified in the table below.

Claim	Corresponding Analysis
11[pre]	Element 1[pre]; EX1002, ¶¶229-231.
11[a]	Element 1[a]; EX1002, ¶232.
11[b]	Element 1[b]; EX1002, ¶233.
11[c]	Element 1[c]; EX1002, ¶234.
11[d]	Element 1[d]; EX1002, ¶234.
11[e]	Element 1[e]; EX1002, ¶¶234-236.

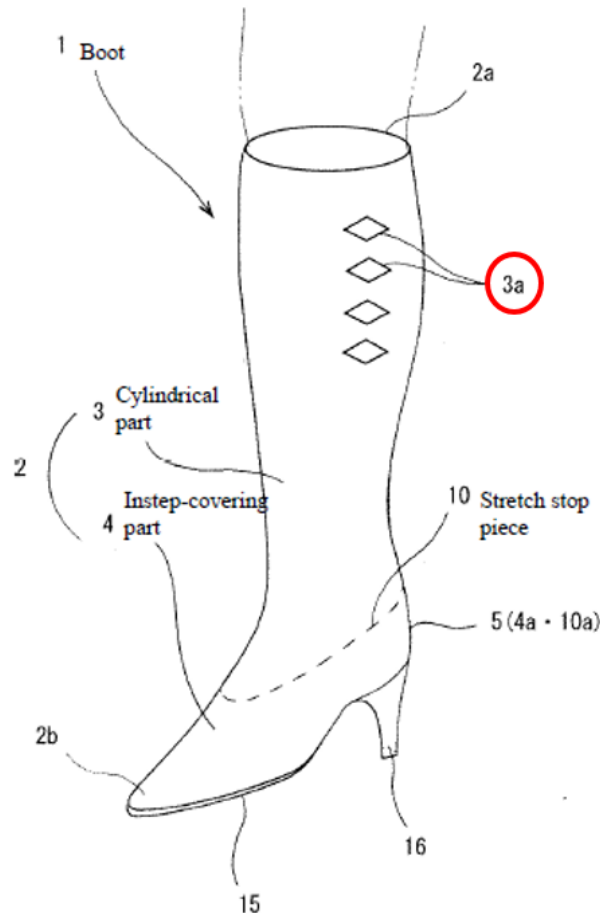
I. Claim 12

The '484 patent does not clearly indicate what a “stitch type” means, but a POSITA would understand that it generally refers to the stitch pattern, which is consistent with the disclosure of the '484 patent. EX1002, ¶234; EX1001, 4:60-5:1 (“By selectively placing multiple different yarns and/or stitch patterns at multiple different locations in the overall structure during the knitting process, flat knitted products may have multiple different physical properties (e.g., different stretchability, different moisture management capabilities, etc.) at multiple different locations or zones within a single, unitary construction (e.g., different properties at different zones or locations within a single footwear structure).”).

To the end, Yamamoto discloses that a “lace-like mesh can also be added to any desired area to create a cool feeling.” EX1017 (Yamamoto), [0019]. Such a

“lace-like mesh,” an example of which is lace-like mesh 3a highlighted below, would be a different stitch type than non-laced portions of Yamamoto’s upper.

[FIG. 1]



Yamamoto further explains that “it is easy to create a cool feeling by adding a lace-like mesh to any location, etc., and it is possible to further enhance fashionability and improve breathability.” EX1017, [0013]. When doing so, a POSITA would understand that a “first area” of the fabric 2 (flat-knitted element) which corresponds to the lace-like mesh would have a different stitch type from a

“second area” of the fabric 2 (flat-knitted element) which does not correspond to the lace-like mesh. EX1002, ¶¶238-239.

Moreover, Yamamoto discloses that “is also possible to create knitting patterns on the fabric.” EX1017 (Yamamoto), [0011]. Specifically, “the shape and dimensions of the boot 1, the material and thickness of the fabric 2 (including the pantyhose type), the form of the mesh 3a (including the pattern and roughness), etc. are not limited to the examples shown.” *Id.*, [0022]. To that end, Choi discloses that “[t]hrough computerized flat bed knitting, more variety of knit patterns and structures can be created and designs can be instantly and efficiently changed through a computer-aided design.” EX1015 (Choi), 6. In particular, “Shima Seiki created a large pattern structure database of knitted parts” such that “[k]nit and garment designs can be easily changed at will.” *Id.*, 18. *See below.*

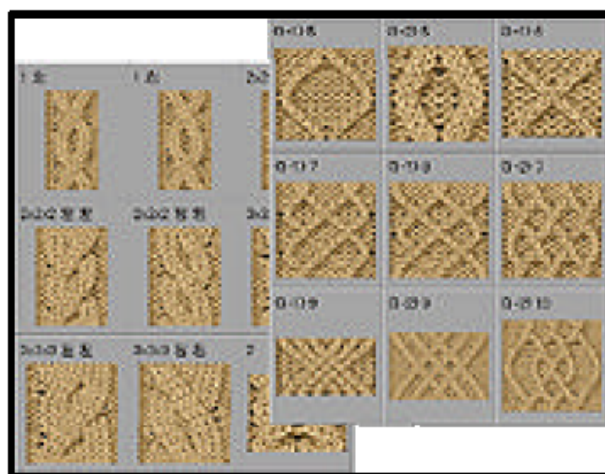


Figure 7.1.2e.
Structure
pattern
database

Id.; 12 (“various structures such as plain, rib, and purl can be created within the seamless garment at the same time.”). A POSITA would understand that forming such different knit structures would require the use of different stitch types, for example different stitch patterns as shown above from Choi. EX1002, ¶¶240-241. Therefore, when constructing Yamamoto’s boot using Shima Seki’s WholeGarment® machine, per Element 1[b], it would have been obvious to incorporate different knit structures on different areas of Yamamoto’s boot, such as the different knit structures stored in Shima Seiki’s database, and in so doing different stitch types would be used in different areas. *Id.* This would have been simple to do, as Choi explains, and would have added to the aesthetics of the boot, which is something Yamamoto expressly describes as desirable. EX1017 (Yamamoto), [0013] (discussing “adding a lace-like mesh to any location ... to further *enhance fashionability* and improve breathability.”); [0019] (“is possible to make boot that is both economical and *fashionable*.”); [0015] (“[the boots] can provide a smooth silhouette and are *fashionable*”); EX1002, ¶241.

J. Claim 13

Claim 13 is substantially similar to claim 8 and is obvious for the same reasons. *See supra*, Claim 8. EX1002, ¶243.

K. Claim 14

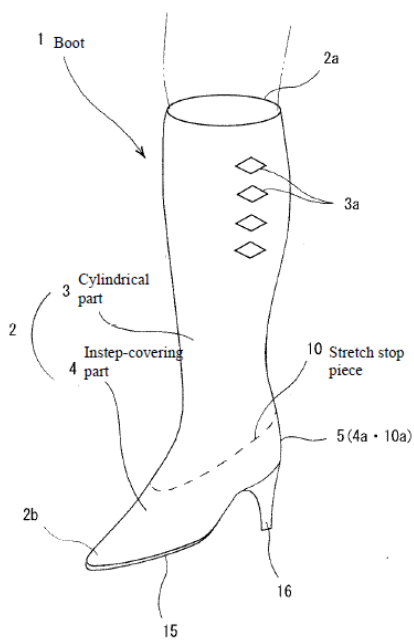
Yamamoto discloses this limitation for the reasons provided with respect to claims 8 and 12 in this ground. EX1002, ¶244. Moreover, it would have been an obvious and easy to implement design choice to use one type of yarn and stitch in a first area, while using a different type of yarn and stitch in a second area in order to give the different areas different characteristics, such as different textures, aesthetics, structures, or wear resistance. EX1002, ¶245. For example, Yamamoto discloses using a “first yarn” having particles with fibers having a deodorizing function from the tip of the foot to the instep of the foot (a first area), but that a “second yarn” without such fibers should be used in other areas of the upper (a second area). *See supra*, Claim 8. At the same time, it would have been obvious to use a thicker, more durable stitch type at least at the tip of the foot where it would be beneficial to have additional wear resistance, as is generally known in footwear design. EX1002, ¶¶246-248; EX1003, ¶¶13-14, 26-28; EX1017 (Yamamoto), [0022] (disclosing that the “material and thickness of the fabric 2 ... are not limited to the examples shown.”).

L. Claim 15

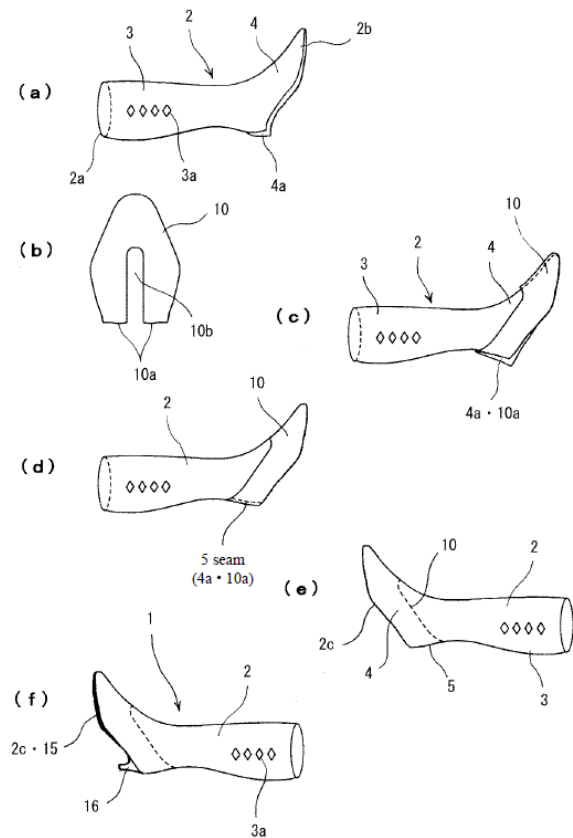
Yamamoto explains that “[t]he entire outer surface of boot 1 (excluding the sole) is formed by a single piece of fabric 2 continuously knitted with yarn” Yamamoto, Abstract. Fabric 2 is a flat-knitted element within the meaning of the

'484 patent. *See supra*, Element 1[a]. Yamamoto further discloses that “boot 1 shown in FIG. 1 can be manufactured according to the following steps 1) to 6) shown in FIG. 2.” EX1017 (Yamamoto), [0023]; [0020] (“FIG. 1 is a perspective view of a boot 1 (stretch boot), and FIGS. 2(a) to 2(f) are explanatory diagrams regarding a method of manufacturing the boot 1.”). Moreover, Yamamoto’s fabric 2 (a flat-knitted element) “is provided so as to cover the entire outer surface of the boot 1 (other than the sole 15) by itself. *Id.*, [0021]. EX1002, ¶¶250.

[FIG. 1]

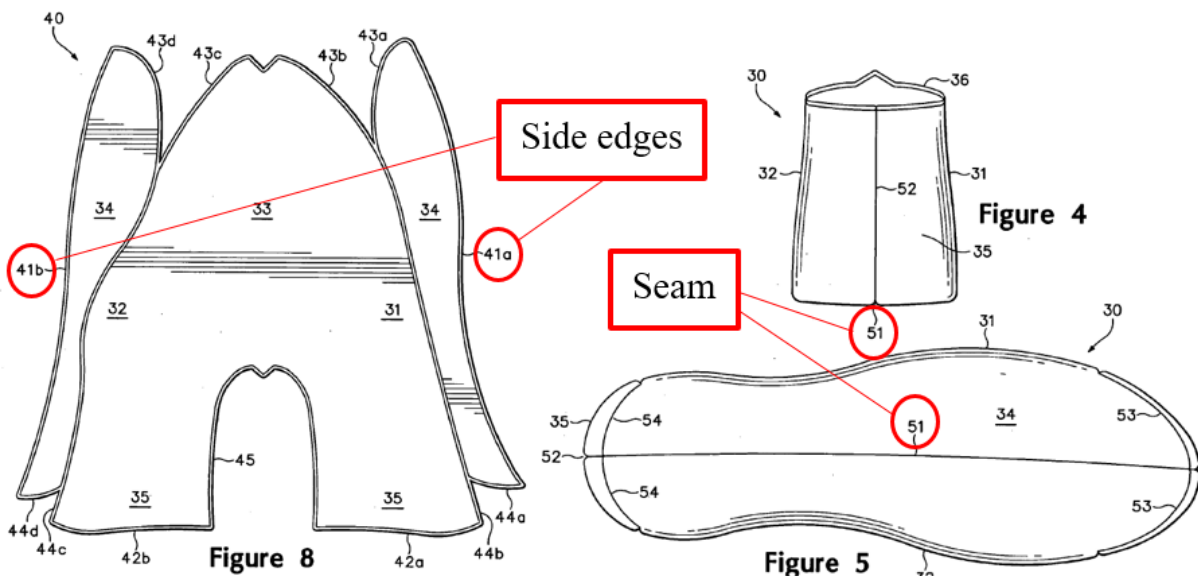


[FIG. 2]

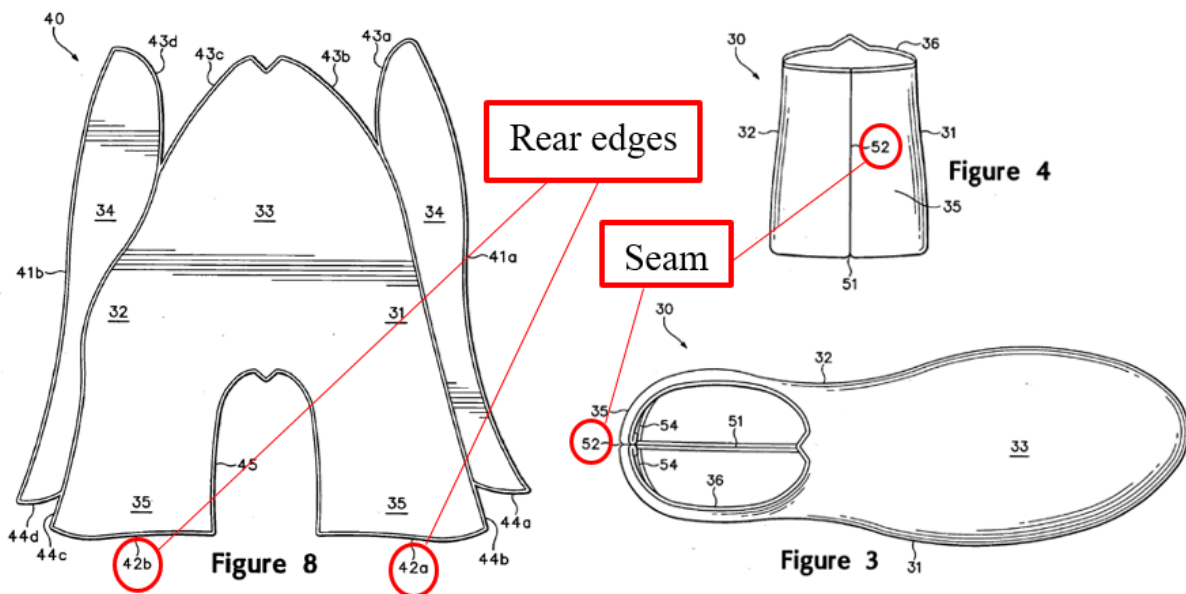


VIII. GROUND 2B: CLAIMS 16-17 ARE OBVIOUS OVER GROUND 2A IN VIEW OF DUA-592

It was known in the field of unitary knit uppers that side and rear edges of first and second side portions of a flat-knitted element could be joined under the foot along longitudinal length of the foot and upwards along a heel, respectively. EX1002, ¶252. In particular, Dua-592 discloses that “[s]eams 51-54 are formed by securing various edges of textile element 40 together. More specifically, (1) seam 51 is formed by securing an edge 41a with an edge 41b” EX1014 (Dua-592), [0038]. Thus, edges 41a-41b would comprise side edges of the first and second side portions, where edges 41a-41b are joined to form seam 51 which extends longitudinally under the foot, as shown below, thereby satisfying claim 16. EX1002, ¶¶253-254.



In addition, Dua-592 discloses that “folding or overlapping of textile element 40 to form seam 51 places edge 42a adjacent to edge 42b, which facilitates the formation of seam 52.... Upon the joining of edges 42a and 42b to form seam 52, the u-shaped area becomes an aperture in textile element 40 and effectively forms ankle opening 36.” EX1014 (Dua-592), [0040].



Thus, edges 42a-42b are rear edges that form seam 52 which extends upward along a heel, thereby satisfying claim 17. EX1002, ¶¶255-256.

It would have been obvious for a POSITA, when constructing Yamamoto’s footwear, to adopt Dua-592’s approach for enclosing the bottom and heel portions because Yamamoto does not provide details on how the upper (fabric 2) is secured to the sole 15 and heel 16, and a POSITA would have looked to known ways in order to supply the missing information. In addition, it would have been obvious to try to

use Dua-592's approach for enclosing the bottom and heel portions since the upper of Yamamoto, even as modified by Choi, has an open bottom and heel area and there are only a finite number of ways of securing such an upper to Yamamoto's sole 15 and heel 16. EX1002, ¶252; EX1003, ¶¶15-18.

IX. DISCRETIONARY FACTORS

A. § 314(a) Does Not Favor Denial

This Petition raises a compelling case of unpatentability for the challenged claims of the '484 patent. Per the Director's June 21, 2022, Memorandum on the "Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation" ("Guidance Memorandum"), this fact "alone demonstrates that the [Board] should not discretionarily deny institution under *Fintiv*." EX1012 (Guidance Memorandum), 4-5.

B. § 325(d) Does Not Favor Denial

Neither of the references for Ground 2A (Yamamoto or Choi) were before the Examiner. And while Dua-592 was cited and relied on by the Examiner to initially reject the claims, Dua-592 is presented here in combination with secondary references (Hong and/or Choi) which were not before the Examiner and which are relied on for the specific limitation added during prosecution to overcome Dua-592. Therefore, the Petition presents new combinations and arguments not previously

considered by the Office and is based on material teachings in the prior art that were not considered during prosecution.

Finally, the Petition makes a strong showing that all claims are unpatentable, and therefore the Board should not discretionarily decline institution.

X. STATUTORY REQUIREMENTS

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

Real party-in-interest is Skechers U.S.A., Inc.

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

The '484 patent is involved in the following litigations:

- *Nike, Inc. v. Skechers U.S.A., Inc.*, Case No. 2:23-cv-09346-AB-PVC (C.D. Cal.)
- *Nike, Inc. v. Lululemon USA, Inc.*, Case No. 1:23-cv-00771-AS (S.D.N.Y)
- *Nike, Inc. v. New Balance Athletics, Inc.*, Case No. 1:23-cv-12666-JEK (D. Mass)
- *Lululemon USA, Inc. v. Nike, Inc.*, IPR2023-01460

To Petitioner's knowledge, there are no other judicial or administrative matters regarding the '484 patent that would affect or be affected by a decision in this proceeding.

C. Designation of Lead And Back-Up Counsel (37 C.F.R. § 42.8(b)(3))

Lead Counsel: Samuel K. Lu (Reg. No. 40,707)

Backup Counsel: Keith Orso (Reg. No. 52,084)

Backup Counsel: Jonathan M. Lindsay (Reg. No. 45,810)

Backup Counsel: Michael Rosen (*pro hac vice* to be requested)

Backup Counsel: Jie Gao (Reg. No. 73,835)

Backup Counsel: Connor He-Schaefer (*pro hac vice* to be requested)

Contact information for Lead and Backup Counsel is as follows:

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1800 Avenue of the Stars, Suite 900
Los Angeles, CA 90067-4276
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D. Service Information (37 C.F.R. § 42.8(b)(4))

Please address all correspondence to lead counsel at the address above.

Petitioner consents to email service at: SkechersNikeIPRs@irell.com.

E. Fees

The Office is authorized to charge Deposit Account No. 09-0946 for any fees required.

F. Grounds for Standing

Petitioner certifies that the '484 patent is eligible for IPR and that Petitioner is not barred or estopped from requesting this IPR.

XI. CONCLUSION

For the reasons set forth above, the challenged claims of the '484 Patent are unpatentable.

Dated: November 4, 2024

Respectfully submitted,

Samuel K. Lu
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IRELL & MANELLA LLP
1800 Avenue of the Stars, Suite 900
Los Angeles, CA 90067-4276

CERTIFICATE OF WORD COUNT

I hereby certify, pursuant to 37 C.F.R. section 42.24, that the foregoing Petition contains 13,370 words, excluding the words in the table of contents, table of authorities, exhibit list, this certificate of word count, and certificate of service. The word count is based on the word count of the Microsoft Word program used to prepare the Petition.

/Susan M. Langworthy/
Susan M. Langworthy

CERTIFICATE OF SERVICE

I hereby certify, pursuant to 37 C.F.R. sections 42.6 and 42.105, that a complete copy of the Petition for *Inter Partes* Review of U.S. Patent No. 9,730,484 and Exhibits are being served via Priority Mail Express on November 4, 2024, the same day as the filing of the above-identified documents in the United States Patent and Trademark Office/Patent Trial and Appeal Board, upon the patent prosecution counsel of record for the Patent Owner:

78342 - SHOOK, HARDY & BACON LLP/NIKE, INC.
2555 Grand Boulevard
Kansas City, MO 64108

Courtesy copies were also sent via ShareSite to Patent Owner's counsel of record in the related district court litigation at the following email address:

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