

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LULULEMON USA INC.,
Petitioner,

v.

NIKE, INC.,
Patent Owner.

Case IPR2024-00159
Patent 9,375,046

**DECLARATION OF DR. DAVID S. BROOKSTEIN IN SUPPORT OF
PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT 9,375,046**

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I. INTRODUCTION

1. I, Dr. David S. Brookstein, submit this declaration on behalf of lululemon usa inc. (“Petitioner”). I understand that this declaration will be submitted as Exhibit 1003 in support of a Petition for *Inter Partes* Review (“IPR”) of U.S. Patent No. 9,375,046 (“the ’046 patent”) along with the exhibits listed in the table below.

Exhibit No.	Description
1001	U.S. Patent No. 9,375,046 to Meir
1002	Excerpts of Prosecution History for U.S. Patent No. 9,375,046
1004	Curriculum Vitae of Dr. David S. Brookstein
1005	U.S. Patent No. 4,702,091 to Good, et al. (“Good”)
1006	U.S. Patent No. 391,005 to Munsing (“Munsing”)
1007	U.S. Patent App. Publ. No. 2014/0130374 to Minami, et al. (“Minami”)
1008	U.S. Patent No. 5,118,569 to Kuroda, et al. (“Kuroda”)
1009	U.S. Patent No. 3,307,379 to Woolley, et al. (“Woolley”)
1010	U.S. Patent App. Publ. No. 2010/0154256 to Dua, et al. (“Dua”)
1011	Tortora et al., Excerpts of Fairchild’s Dictionary of Textiles, Seventh Edition, 1996
1012	Memorandum and Order on Claim Construction, <i>Nike, Inc. v. Puma North America, Inc.</i> , C.A. No. 18-10876-LTS (D.Mass.)
1013	Spencer, David J., Knitting Technology: A Comprehensive Handbook and Practical Guide, Chapters 6, 7, and 18, Third Edition, 2001

Exhibit No.	Description
1014	Joint Disputed Claim Terms Chart, <i>Nike, Inc. v. lululemon usa inc.</i> , C.A. No. 1:23-cv-00771-AS (S.D.N.Y.)

2. This declaration is provided after my review and analysis of the '046 patent, the prior art, relevant background technology, and is also based on my education and experience, as well as additional materials identified herein.

II. BACKGROUND AND QUALIFICATIONS

3. I am qualified to testify as an expert in this case. I was awarded a Bachelor of Textile Engineering degree from the Georgia Institute of Technology (“Georgia Tech”) in 1971, a Master of Science degree in Textile Technology from the Massachusetts Institute of Technology (“MIT”) in 1973, and a Doctor of Science degree in the field of mechanical engineering from MIT in 1976.

4. I was a professor of Textile Engineering at Georgia Tech from 1975-1980. I was Associate Director of Albany International Research Co. (formerly Fabric Research Laboratories) from 1980-1994. I was Dean of the School of Engineering and Textiles and Executive Director of Research at Philadelphia University (formerly Philadelphia College of Textiles and Science) from 1994 to 2010. In 2010, I was appointed Executive Dean for University Research at Philadelphia University and served in that position through June 2012. In July 2012, I resigned from Philadelphia University to become Dean of the Science, Technology,

Engineering, and Mathematics Division of Montgomery County Community College in Pennsylvania. In August 2014, I was appointed Professor of Mechanical Engineering and Director of Undergraduate Affairs at the Temple University College of Engineering, and in July 2017 I was promoted to Senior Associate Dean for Undergraduate Studies at the Temple University College of Engineering. I retain my rank of Professor of Mechanical Engineering and I am responsible for the capstone senior design course required of all engineering graduates. In 1995 I was elected by my peers as a Fellow of the American Society of Mechanical Engineers, which is an honorific awarded to only about 1% of its members. In 1992 I was elected by my peers as a Fellow of The Textile Institute (United Kingdom). In 1998 I was awarded the ASTM Harold Dewitt Smith Award for textile fiber utilization. In 1993 I was awarded the Techtextil Innovation Prize (Germany). I have conducted research on knitting when I was employed at the Albany International Research Co. (formerly Fabric Research laboratories, Inc.). I taught courses in knitting technology during my period as an assistant professor of textile engineering at Georgia Tech and as Dean of Engineering and Textiles at Philadelphia University (formerly Philadelphia College of Textiles and Science).

5. I am the named inventor on 13 U.S. patents, all of which relate to the to the field of structures made using the principles of textile engineering and science.

6. A copy of my curriculum vitae, provided as Exhibit 1004, contains further details concerning my education, experience, publications, patents, and other qualifications to render an expert opinion in this matter.

7. I am being compensated for my work in this matter at my standard hourly rate for consulting services. My compensation in no way depends on the outcome of this proceeding. I have no personal or financial stake or interest in the outcome of this proceeding.

8. I understand that Petitioner will cite and rely on significant portions of my testimony and analysis set forth in this declaration in support of its Petition challenging the patentability of the '046 patent. I have not been provided or reviewed the Petition or any drafts of the Petition, and, thus, the Petition or drafts of the Petition have not influenced my testimony or analysis set forth in this declaration.

9. Between now and such time that I may be asked to testify, I expect to continue my review, evaluation, and analysis of evidence presented before and/or at the hearing. I expect to review the declarations and other evidence submitted by Nike's experts. I reserve the right to amend or supplement this declaration, as appropriate, after considering any opinions set forth by Nike's experts. In the event that additional relevant information becomes available to me, I also reserve the right to review and consider that information in further developing or refining my opinions.

III. LEGAL PRINCIPLES

10. I am not an attorney or patent agent. Therefore, in formulating my opinions and conclusions in this proceeding, I have been provided with an understanding of the relevant aspects of U.S. patent law that govern the issues of patent validity by counsel for the Petitioner.

A. Claim Construction

11. I understand, in determining whether a patent claim is unpatentable in view of the prior art, the Patent Office construes the claim by giving the claim its ordinary and customary (i.e., plain and ordinary) meaning ascribed to it by a person of ordinary skill in the art at the time of the '046 patent's priority date ("POSA"). For the purposes of my analysis and opinions, and to the extent necessary, I understand each claim to have its ordinary and customary meaning under the required standard.

B. Prior Art

12. I understand that, in this IPR proceeding, the prior art to the '046 patent includes patents and printed publications in the relevant field(s) that predate the '046 patent's priority date.

C. Anticipation

13. I understand that a person cannot obtain a patent if someone else already made an identical invention, which is referred to as "anticipation." I

understand that to anticipate a claim, each and every element in the claim must be, as properly construed, present in a prior art reference either expressly and/or inherently.

D. Obviousness

14. I understand that a claim of a patent may be obvious to a person of ordinary skill in the art if the differences between the subject matter set forth in the patent claim and the prior art are such that the claimed subject matter as a whole would have been obvious at the time of the '046 patent's priority date.

15. I understand that obviousness is a determination of law based on various underlying determinations of fact. In particular, these underlying factual determinations include (1) the scope and content of the prior art; (2) the level of ordinary skill in the art at the time the '046 patent's priority date; (3) the differences between the claimed invention and the prior art; and (4) the extent of any proffered objective "indicia" of non-obviousness. I understand that the objective indicia, also known as secondary considerations, which may be considered in such an analysis include, among other factors: the commercial success of the patented invention (including evidence of industry recognition or awards), the existence of a long-felt but unmet need in the field satisfied by the invention, the failure of others to arrive at the invention, industry acquiescence and recognition of the invention, initial skepticism of the invention by others in the field, the extent to which the inventors

proceeded in a direction contrary to the accepted wisdom of those of ordinary skill in the art, and licensing of the patent.

16. In determining the scope and content of the prior art, I understand a reference is considered prior art for the obviousness analysis if it falls within the inventors' field of endeavor. Additionally, a reference is prior art for the obviousness analysis, even if from a different field of endeavor, if it is reasonably pertinent to the particular problem for which the invention was made. A reference is reasonably pertinent if it is something a person of ordinary skill in the art would have looked to when attempting to solve the problem addressed by the patent at issue.

17. While multiple prior art references or elements may be combined to render a patent claim obvious, I understand that a patent claim composed of several elements is not proven obvious merely by demonstrating that each of its elements was, independently, known in the prior art. I understand that I should consider whether there is an "apparent reason" or motivation to combine the prior art references or elements in the way the patent claims. It is my further understanding that the law recognizes several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include: combining prior art elements according to known methods to yield predictable results; simple substitution of one known element for another to obtain

predictable results; a predictable use of prior art elements according to their established functions; applying a known technique to a known method or product ready for improvement; and choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

18. I understand the obviousness analysis must be performed from the perspective of a person of ordinary skill in the art at the time of the '046 patent's priority date. This is to avoid using impermissible hindsight in the analysis. The claims of the patent must not be used to provide a road map for obviousness; instead, the claims would have been obvious if a person of ordinary skill in the art would have been motivated to combine the teachings of the prior art to arrive at the claimed invention and had a reasonable expectation of success in doing so.

19. An obviousness analysis also must consider whether there are additional factors that would indicate that the invention would not have been obvious. These factors include whether there was: (i) a long-felt need in the industry; (ii) any unexpected results; (iii) skepticism of the invention; (iv) a teaching away from the invention; (v) commercial success; (vi) praise by others for the invention; and (vii) copying by others. I am not aware of any evidence that would suggest that claims 1–3, 7–9, and 14–20 (“challenged claims”) of the '046 patent would have been non-obvious based on these additional factors.

IV. THE '046 PATENT

20. A POSA would have recognized that the '046 patent discloses a fabric formed of a weft knitted structure. The weft knit structure consists of one continuous yarn running widthwise across the fabric and forming all of the loops in each “course.” Ex.1013, 3-4. Weft knitted fabrics may be produced on weft knitting machines. *Id.* Below is a drawing that shows the basic features of such a machine.

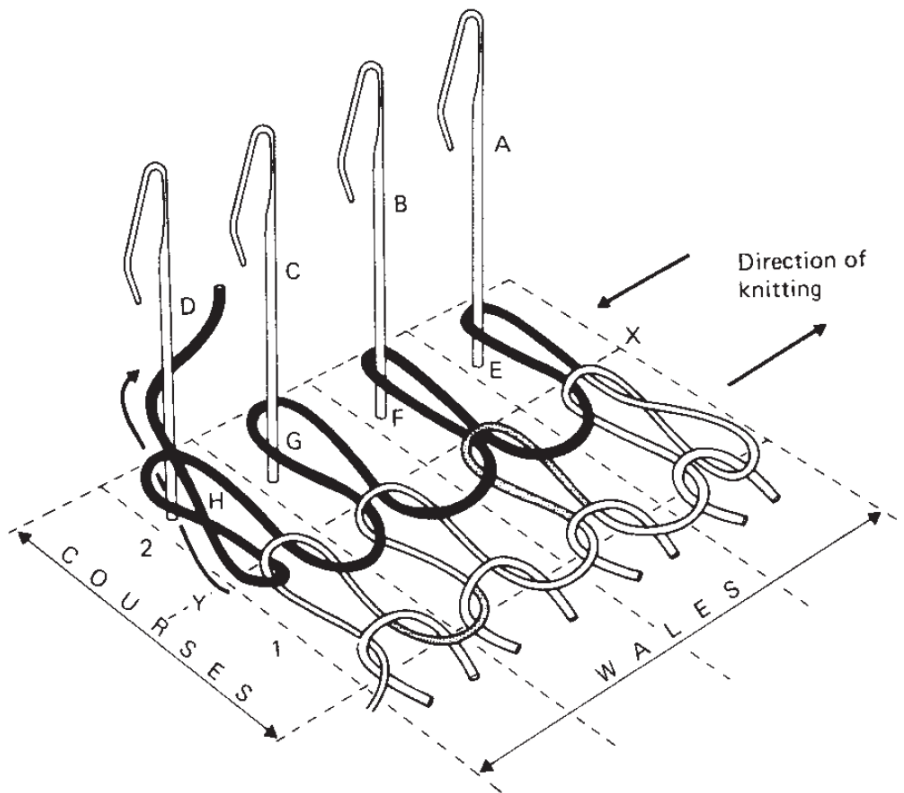


Fig. 6.1 Weft knitting.

Id. The knitting needles (A,B,C,D) are supplied with the same yarn during the same knitting cycle so that the yarn path (in the form of a course length) follows a course in the fabric passing through each needle loop knitted from it (E,F,G,H). *Id.*

21. The fabric disclosed in the '046 patent is described as produced on a machine with a set of front knitting needles and another set of rear knitting needles that can be angled to form a V-bed. Ex.1001, 19:1-10. Figure 9 of the '046 patent is a schematic perspective view of an embodiment of a knitting machine configured for manufacturing the knitted component. *Id.* 3:37-39.

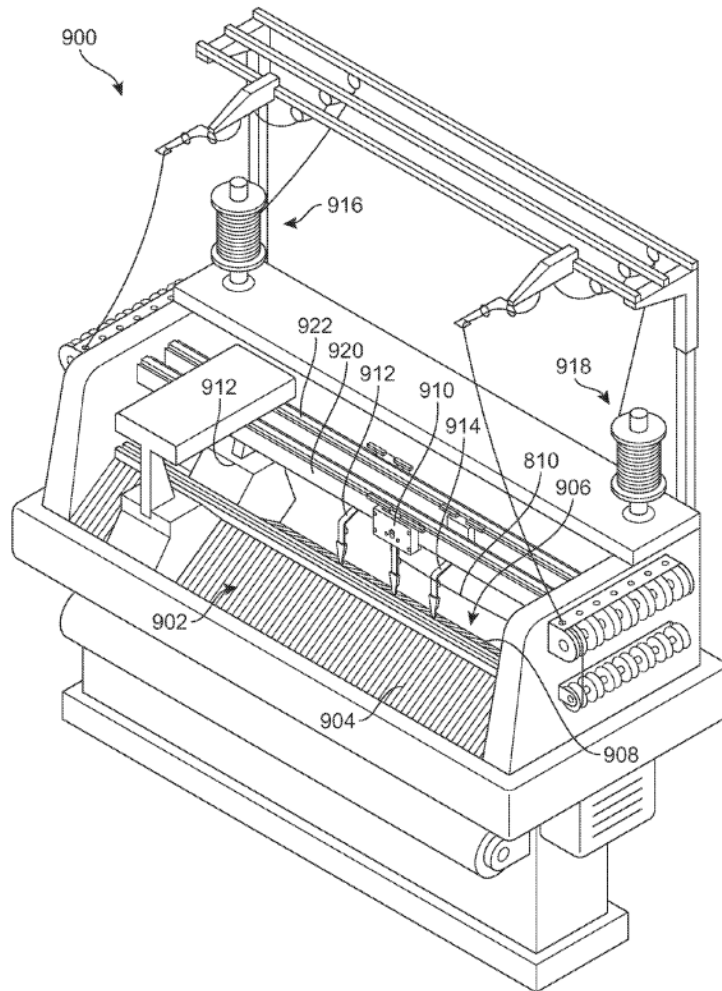


FIG. 9

Id., Fig. 9.

22. Below is a drawing that I used when I taught courses on the subject of knitting at Philadelphia University. This drawing provides a side view of the type of machine disclosed in Figure 9 of the '046 patent.

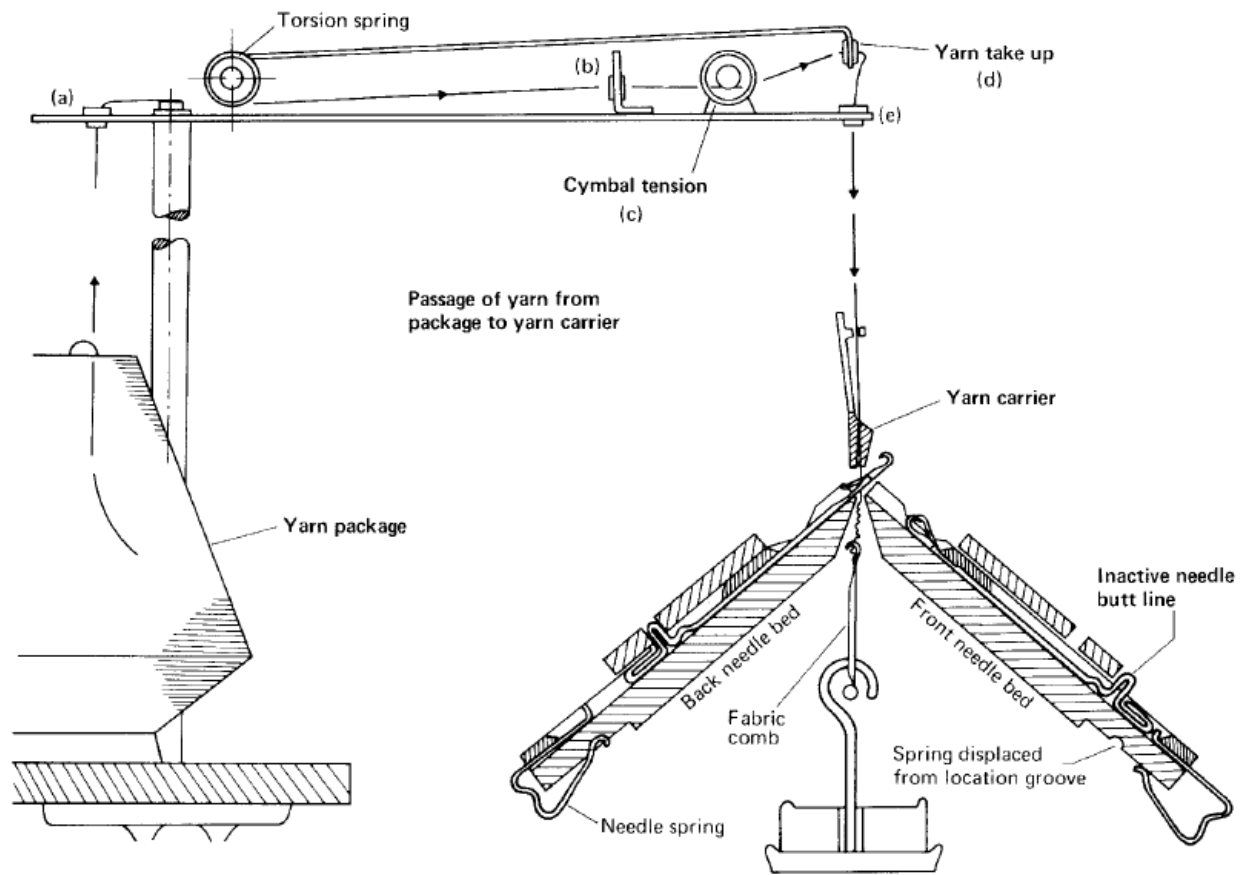


Fig. 18.1 Passage of yarn from package to yarn carrier.

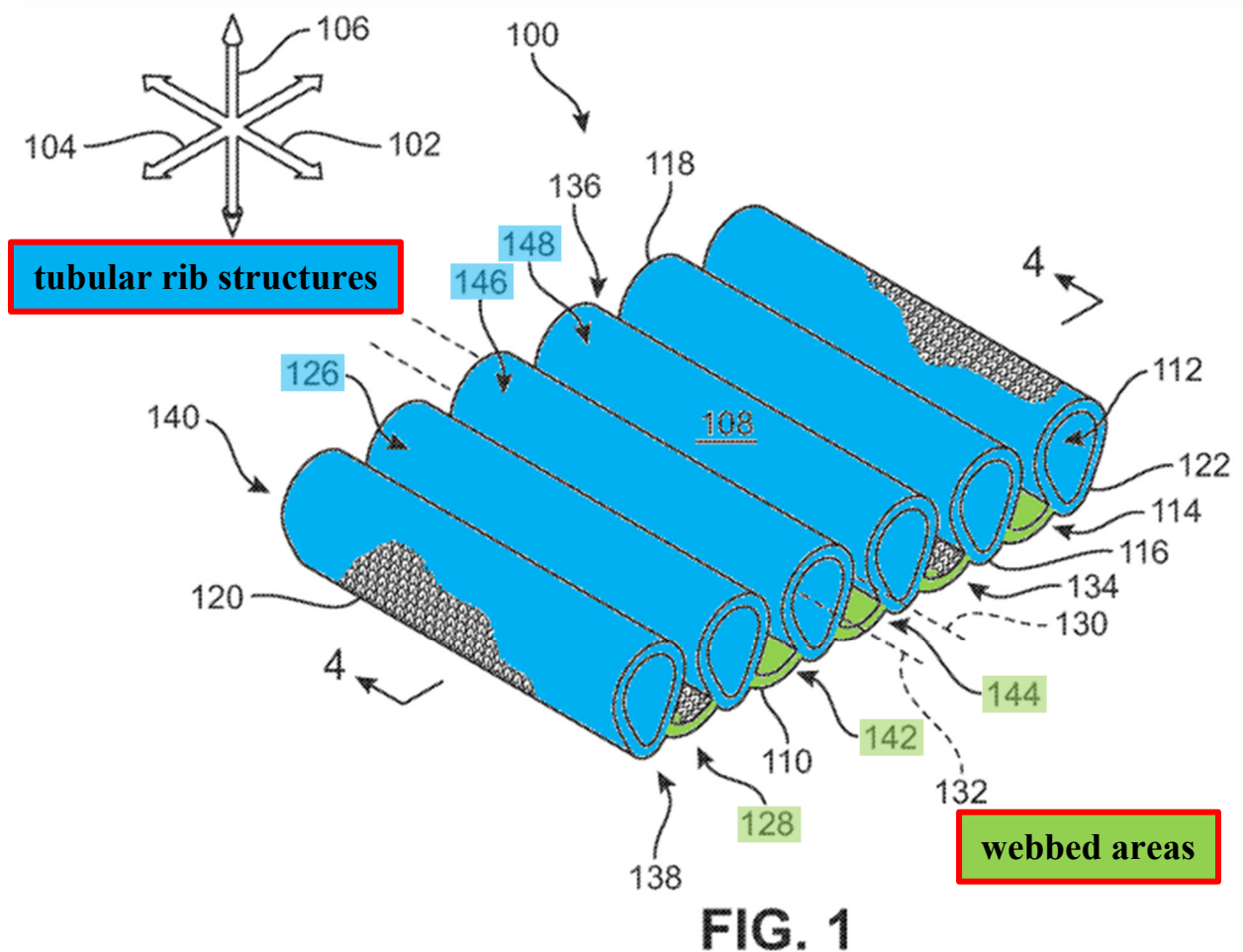
Ex.1013, 40.

A. Specification of the '046 Patent

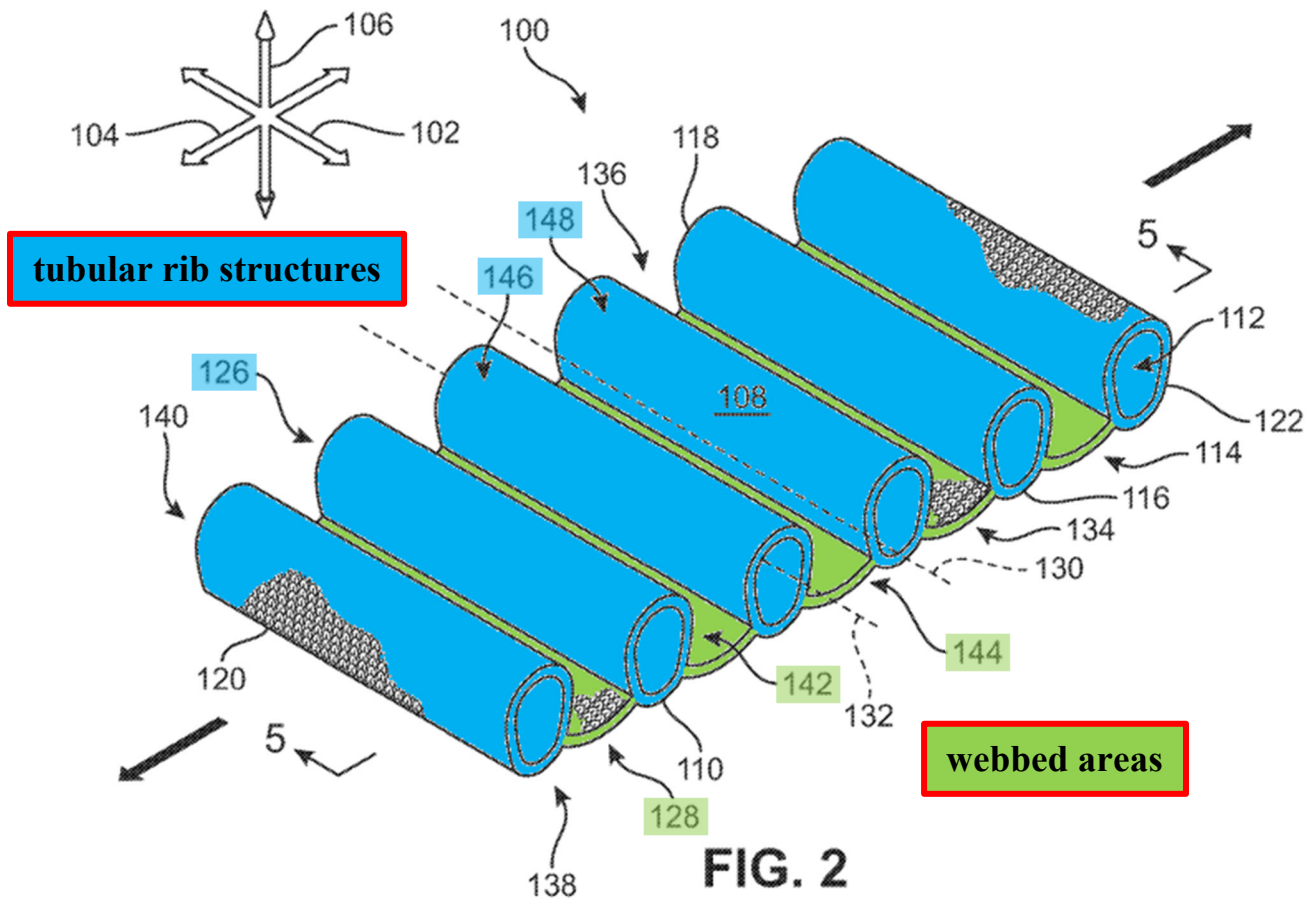
23. The '046 patent relates to articles with ribbed knitted components. Ex.1001, 1:20-22, 4:34-50. The '046 patent describes articles including “apparel (e.g., shirts, pants, socks, jackets, undergarments), athletic equipment (e.g., golf bags, baseball and football gloves, soccer ball restriction structures), containers (e.g.,

backpacks, bags), and upholstery for furniture (e.g., chairs, couches, car seats).” *Id.*, 4:34-40. According to the ’046 patent, the rib structures provide strength and/or support to a knitted component and “can be hollow tubes formed in knitted component 100 by co-extensive and overlapping knit layers that are closed to form the tube.” *Id.*, 4:55-61.

24. Figure 1 illustrates knitted component 100 in an unstretched or neutral position. *Id.*, 8:28-30.



Id., Fig. 1 (annotated). Figure 2 depicts a different position where knitted component 100 is stretched or extended. *Id.*, 5:5-20.



Id., Fig. 2 (annotated).

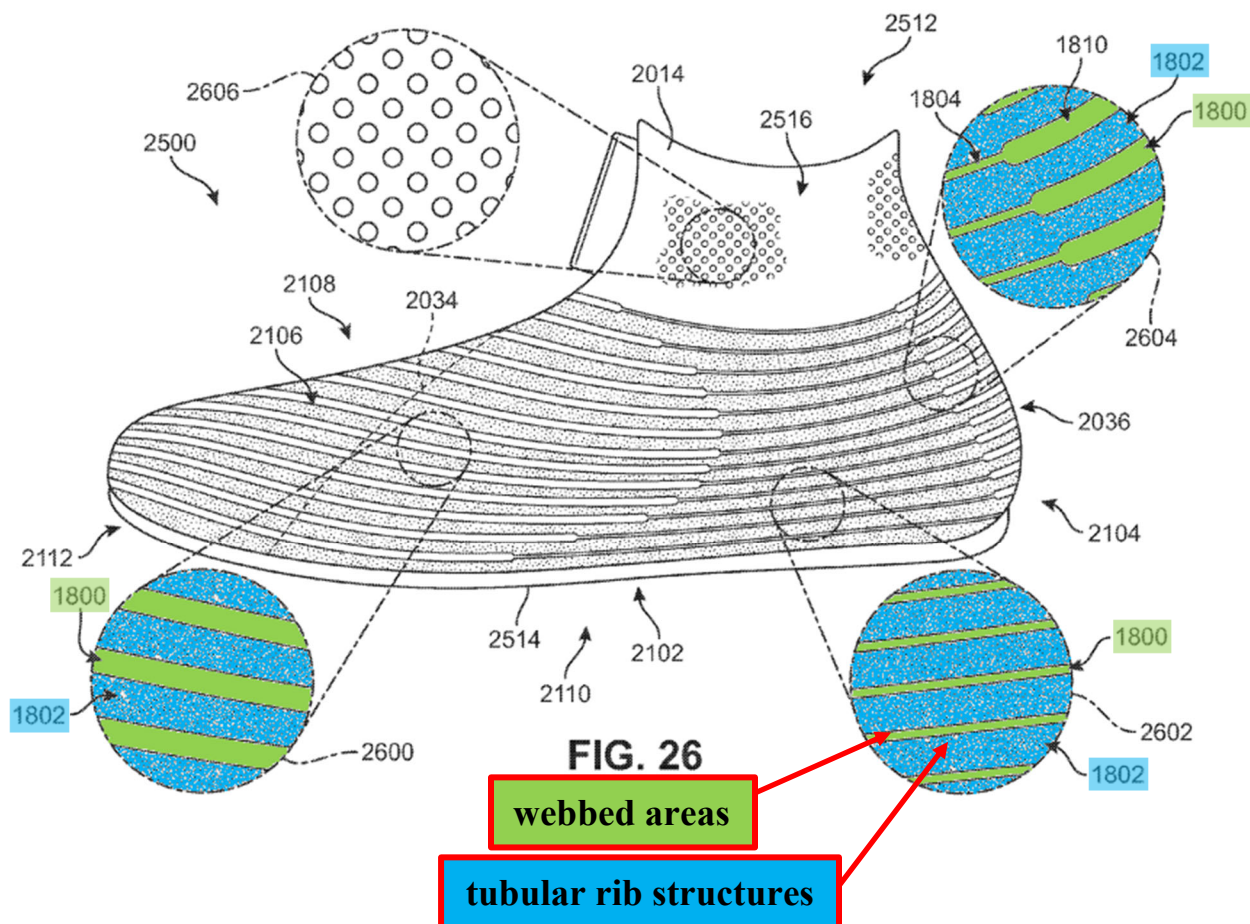
25. The '046 patent provides that knitted component 100 has a “front surface 108 and a back surface 110 ... [and] peripheral edge 114.” *Id.*, 6:35-47. In addition, knitted component 100 includes “a plurality of tubular rib structures 126 and a plurality of webbed areas 128.” *Id.*, 7:9-12. The tubular rib structures 126 have a central area that may incorporate another element, such as a tensile element, which passes through the hollow between the two knit layers forming the tubular rib

structures 126. *Id.*, 7:26-30. The “[w]ebbed areas 128 and/or tubular rib structures 126 can flex, deform, or otherwise move as knitted component 100 stretches.” *Id.*, 8:17-20.

26. For reference purposes, knitted component 100 is illustrated with respect to a Cartesian coordinate system in at least Figures 1-5 and 7. Specifically, a longitudinal direction 102 (corresponding to the wales), a lateral direction 104 (corresponding to the courses), and a thickness direction 106 of knitted component 100 are shown in the figures. *Id.*, 6:28-32. This description and assignment of a coordinate system is contrary to the common nomenclature familiar to a POSA. In the industry, a POSA would have understood that the “longitudinal” direction corresponds to the direction that the fabric comes off a knitting machine after a row or knitting loops (“courses”) are formed. Thus, the common understanding of “longitudinal” is different from and at a right angle to the longitudinal direction described in the ’046 patent. Similarly, a POSA would have understood that the “lateral” direction, as used in the industry, represents the direction the knitted loops are formed as a single yarn moves from knitting needle to knitting needle in a horizontal direction and that each knitting needle forms a “wale.” This is also different from the lateral direction described in the ’046 patent. However, for purposes of this declaration, I have adopted the unusual description of

the lateral and longitudinal directions provided in the '046 patent and have used that description in the analysis of the claims where applicable.

27. Among the disclosed embodiments in the '046 patent is an article of footwear that has webbed areas (green) and tubular structures (blue), as shown in Figure 26. *Id.*, 4:22-23, 29:35-38.



Id., Fig. 26 (annotated).

B. Claims of the '046 Patent

28. I have included independent claim 1 below with bracketed labels added for convenient referencing to the claim limitations.

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

29. I include independent claim 8 of the '046 patent here for reference:

Claim 8	
8[pre]	An upper comprising:
[8a]	a plurality of webbed areas and a plurality of tubular rib structures;
[8b]	the plurality of webbed areas having a front side and a back side;
[8c]	the tubular rib structures being disposed adjacent to the webbed areas;
[8d]	the tubular rib structures having a first curved portion with a first curve length extending from the front side of the webbed areas, and a second curved portion with a second curve length extending from the back side of the webbed areas, the first curve length being greater than the second curve length;
[8e]	the webbed areas configured to move between a neutral position and an extended position, the webbed areas being biased to move toward the neutral position; and
[8f]	at least one of the webbed areas and the tubular rib structures configured to stretch from the neutral position to the extended position in response to a force applied to the upper.

30. Independent claim 20 of the '046 patent is further set forth below:

Claim 20	
[20pre]	An article comprising:
[20a]	a plurality of webbed areas having a front surface, the webbed areas configured to move between a neutral position and an extended position, the webbed areas being biased to move toward the neutral position, and
[20b]	a plurality of tubular structures that are adjacent to the webbed areas, the tubular structures;
[20c]	wherein at least one of the webbed areas or tubular structures is configured to stretch to move the webbed areas to the extended position in response to a force applied to the article.
[20d]	wherein in the neutral position, a first area of the front surface is hidden from visual observation from a first viewing perspective, and
[20e]	wherein in the extended position, the first area of the front surface is revealed for visual observation from the first viewing perspective.

C. Prosecution History of the '046 Patent

31. I have reviewed the prosecution history of the application that led to the '046 patent. During prosecution of the '046 patent, the Examiner rejected the pending claims as being anticipated by Kuroda (Ex.1008) or Woolley (Ex.1009) or obvious over Dua (Ex.1010) in view of Woolley. Ex.1002, 52-60.

32. Patent Owner responded to the Office Action with amendments and arguments. *Id.*, 36-45. Subsequently, Patent Owner filed a Supplemental

Amendment, amending the independent article claims to “include the feature that the first area of the front surface is hidden from visual observation from a first viewing perspective, and in the extended position, the first area of the front surface is revealed for visual observation from the first viewing perspective” and amending the independent upper claim to “include the feature that a first curved portion with a first curve length extends from the front side of the webbed areas, and a second curved portion with a second curve length extends from a back side of the webbed areas, the first curve length being greater than the second curve length.” *Id.*, 24-31. The Examiner next issued a Notice of Allowance without providing additional comments regarding the claims. *Id.*, 11-15.

V. LEVEL OF A PERSON OF ORDINARY SKILL IN THE ART (POSA)

33. I have been informed by counsel for Petitioner that for purposes of assessing the obviousness of the '046 Patent, the level of skill possessed by the hypothetical person of ordinary skill in the art is informed by several factors. These factors include the type of problems encountered in the relevant art, the prior art solutions to those problems, the rapidity with which innovations are made in the relevant art, the sophistication of the relevant technology, and the educational level of active workers in the field.

34. The relevant field of the '046 patent relates to articles with knitted components, including “articles of footwear incorporating knitted components.”

Ex.1001, 1:20-22, 4:34-50. I am an expert in the relevant field and have taught courses dealing with knitting to both undergraduate and graduate students at the Georgia Institute of Technology (Georgia Tech) School of Textile Engineering and at Philadelphia University (formerly Philadelphia College of Textiles and Science). I was also an expert around the time of the '046 patent's priority date in September 2014. As an expert, I am familiar with the knowledge and skill of a POSA at the '046 patent's priority date.

35. In my opinion, a POSA at the relevant time period, which I understand to be around the time of the '046 patent's priority date, September 2014, would have had at least a bachelor's degree in mechanical engineering, textile engineering, or similar technical degree and at least 3 years of experience working with knitted textiles for use in fabric-based articles, including apparel such as footwear. For individuals with different educational backgrounds, a person could still be of ordinary skill in the art provided that person's additional experience compensates for any differences in that person's education as stated above. This education and background provide the necessary training and understanding of apparel articles described in the '046 patent. Thus, based on my experience in the field of textile engineering, the person of skill would have the education and experience described above. All of my opinions set forth herein are provided from the perspective of a POSA.

VI. CLAIM CONSTRUCTION

36. I understand the Patent Trial and Appeal Board (“PTAB”) construes the claims using the same claim construction standard that would be used in a district court case. Under this standard, I understand that claims are generally given their ordinary and customary meaning, as understood by a POSA.

37. I understand that Petitioner and Patent Owner agreed in the district court case on constructions for certain claim terms and proposed different constructions for other terms. Ex.1014, 1-11. I also understand that in a different litigation between Puma and Patent Owner (“Puma Litigation”), the parties Puma and Patent Owner proposed constructions for particular claim terms of the ’046 patent, and the court in that litigation issued a claim construction order (Ex.1012).

A. “tubular structures”

38. Claims 1 and 20 are independent claims and directed to an article that comprises “a plurality of tubular structures that are adjacent to the webbed areas.” I understand that Patent Owner proposes in the district court case that “tubular structures” should be given its “[o]rdinary and customary meaning; i.e., tube-like structures.” Ex.1014, 3-6.¹ I understand that in the district court case Patent Owner has taken the position that a “tube-like” structure does not have to be hollow like a tube. I understand Patent Owner instead argues that the ’046 patent claims cover a knitted, ribbed article regardless of whether the ribs have the shape of a tube.

39. I agree that the term “tubular structures” should be given its plain and ordinary meaning, but I disagree with Patent Owner regarding the plain and ordinary meaning. In my opinion, a “tubular structure” must have the shape of a tube, and thus the proper plain and ordinary meaning is “elongated hollow structures.” Such a meaning is consistent with the claim language and the ’046 patent’s specification.

¹ I understand that Patent Owner stated in the Puma Litigation that “tubular structures” should be given its “ordinary and customary meaning” and did not propose any construction. Ex.1012, 16. Subsequently, I understand that the district court construed “tubular structures” to mean “tube-like structures.” *Id.*, 15-17. I understand that Puma stated that the “tubular structures” should be construed as “tube shaped structure, *i.e.*, having the structure of a hollow elongated cylinder,” and the district court did not adopt Puma’s proposed construction. *Id.*, 16. I understand that the Puma Litigation settled without any final resolution of the construction of “tubular structures.”

40. According to the '046 patent, the knitted component 100 may include rib structures, and in some cases the “rib structures can be hollow tubes.” Ex.1001, 4:55-61. The '046 patent also provides that the knitted component 100 may include ribs, and, in some implementations, the “knitted component 100 can include a plurality of tubular rib structures 126.” *Id.*, 7:4-12. The term “tubular” therefore refers to a specific type of rib and makes clear that the tubular structure is not a non-tubular rib. In addition, the '046 patent generally provides that “tubular rib structures 126 can be areas of knitted component 100 constructed with two or more co-extensive and overlapping knit layers ... [which] may be formed of unitary knit construction in such a manner so as to form tubes or tunnels, identified as tubular rib structures 126 ... a central area is generally unsecured to form a hollow between the two layers of knitted material forming each knit layer.” *Id.*, 7:14-30. Further, “the central area of tubular rib structures 126 may be configured such that another element (e.g., a tensile element) may be located between and pass through the hollow between the two knit layers forming tubular rib structures 126.” *Id.* As I explain in greater detail in this declaration, the challenged claims are unpatentable as anticipated and/or obvious regardless of which construction is adopted. In Ground 2, I specifically address the invalidity of the claims 1–3, 7, 17, 18, and 20 under Patent Owner’s proposed construction that a tubular structure is a non-tubular rib.

B. “neutral position”

41. Claims 1, 8, and 20 are independent claims and recite “the webbed areas configured to move between a neutral position and an extended position.” I understand that in the district court case Petitioner and Patent Owner have agreed this term means “position in the absence of applied force.” Ex.1014, 11.

C. “extended position”

42. Claims 1, 8, and 20 are independent claims and recite “the webbed areas configured to move between a neutral position and an extended position.” I understand that in the district court case Petitioner and Patent Owner have agreed this term means “position in response to applied force.” Ex.1014, 11.

D. “unitary knit construction”

43. Claim 18 is a dependent claim and recites “wherein the knitted component is formed of unitary knit construction.” I understand that in the district court case Petitioner and Patent Owner have agreed this term means “formed as a one-piece element through a knitting process.” Ex.1014, 11.

44. As I explain below in detail, the challenged claims would have been obvious to a POSA under either Patent Owner’s interpretation or the plain and ordinary meaning of the claim terms.

VII. OVERVIEW OF GROUNDS

45. Below is a table listing the grounds of unpatentability for the '046 patent:

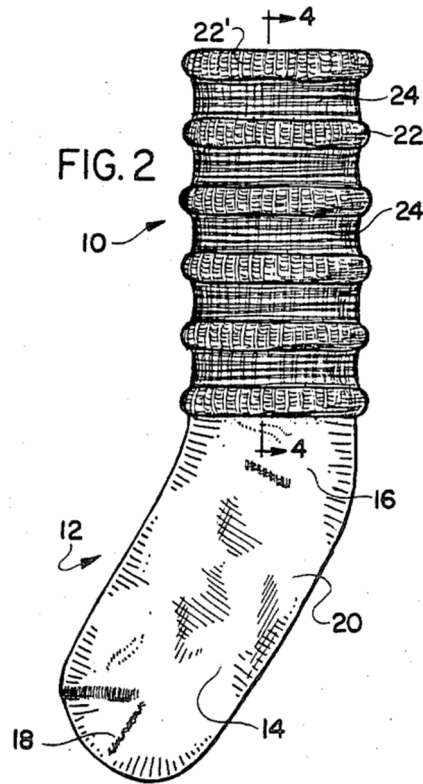
Ground	Reference(s)	Basis	Challenged Claims
1	Good	§102 / §103	1–3, 7, 16–18, 20
2	Munsing	§102	1–3, 7, 17, 18, 20
3	Minami	§102 / §103	8, 9, 14, 15, 19

VIII. GROUND 1: GOOD RENDERS CLAIMS 1–3, 7, 16–18, AND 20 UNPATENTABLE

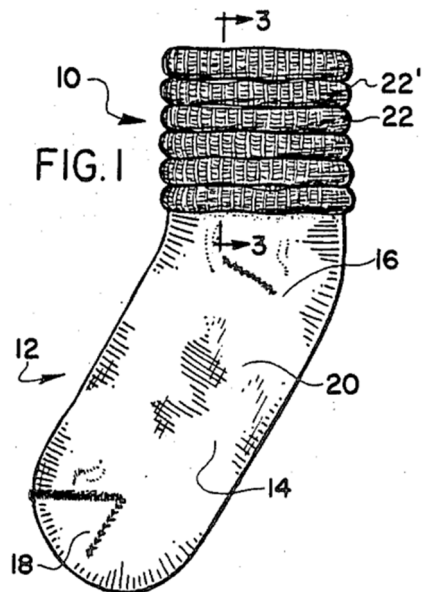
A. Summary of Good (Ex.1005)

46. Good is a patent that issued in 1987. Ex.1005, Front Page. I understand that Good was neither considered nor cited during prosecution of the '046 patent. Ex.1001.

47. Good discusses an article with tubular structures separated by webbed areas. Ex.1005, Abstract. In particular, Good describes knitted cuff members utilized in socks, wrist bands, leg warmers, and similar items. *Id.*, 1:5-7. Figure 2 illustrates a cuff member 10. *Id.*, 3:49-53.



Id., Fig. 2. The cuff member 10 has “rib portions 22” and “connecting portions 24” that separate the rib portions. *Id.*, 3:67-4:8. The cuff member 10 stretches between (i) a “relaxed condition” where the rib portions 22 are close and adjacent to one another and where the connecting portions 24 are generally not visible and (ii) an “extended or elongated condition” where the rib portions 22 and the connecting portions 24 are elongated with the rib portions 22 spaced apart. *Id.*, 4:8-18. As illustrated above, Good’s Figure 2 depicts the extended condition. Good’s Figure 1 below depicts the relaxed condition.



Id., Fig. 1.

48. The cross-sectional view in Figure 3 of Good's cuff member 10 illustrates that the rib portions 22 (blue) have the shape of a tube, namely they form elongate hollow tunnels extending around the article.

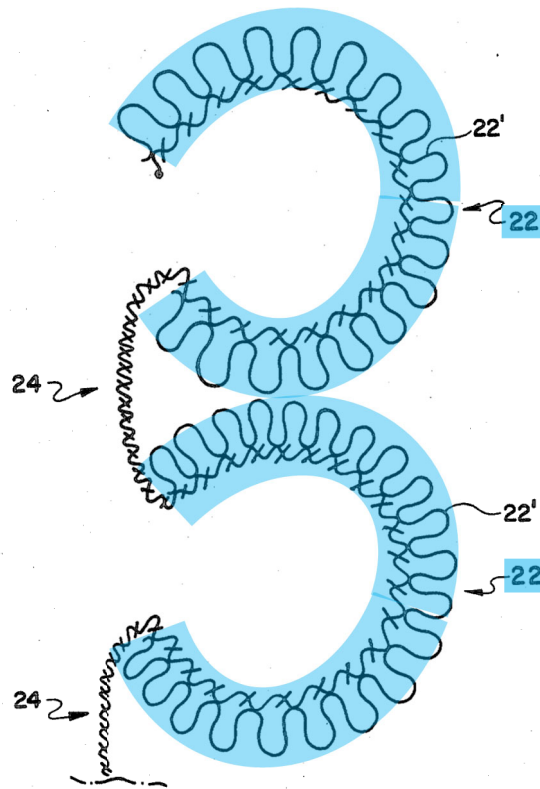


FIG.3

Id., Fig. 3 (annotated). The rib portions 22 thus are tubular structures.

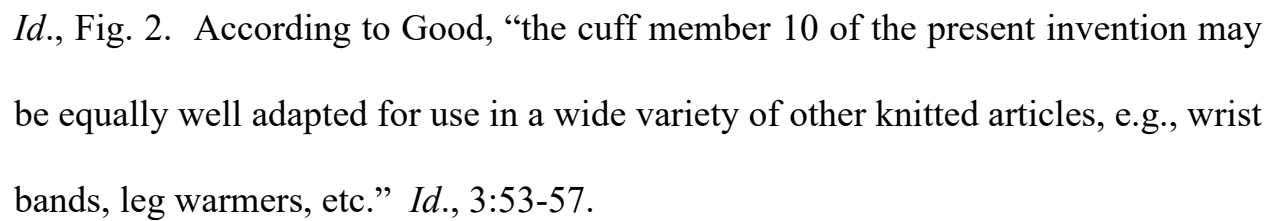
B. Good Anticipates Claim 1

49. Good describes an article of clothing, including a sock. Ex.1005, 1:5-10. The article includes tubular structures adjacent to webbed areas and stretches to an extended position in which part of the webbed area's front surface is revealed. *Id.*, Abstract, Figs. 1-2. For the reasons I explain in detail below, Good discloses an article with all limitations of claim 1.

1. Preamble of Claim 1

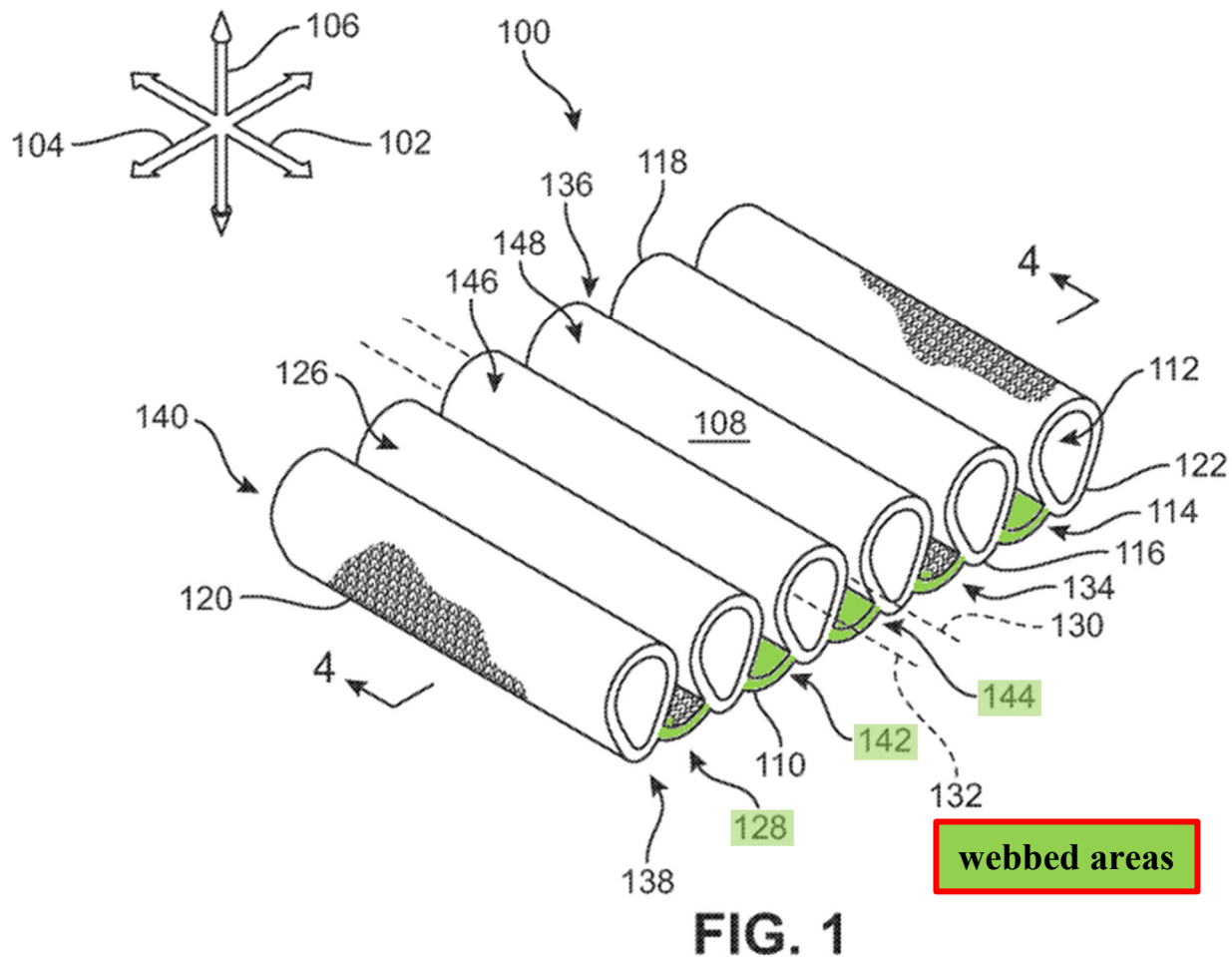
50. The preamble of claim 1 recites “[a]n article.” The ’046 patent specifies that a sock is a type of article for the claimed invention. Ex.1001, 4:34-40 (“the

51. Good discloses an article, specifically, a sock 12 with a cuff 10. Ex.1005, 3:49-53. The sock 12 with the cuff 10 is illustrated in below Figure 2. *Id.*



2. Limitation 1[a]: “a plurality of webbed areas that include a plurality of courses formed from a first yarn”

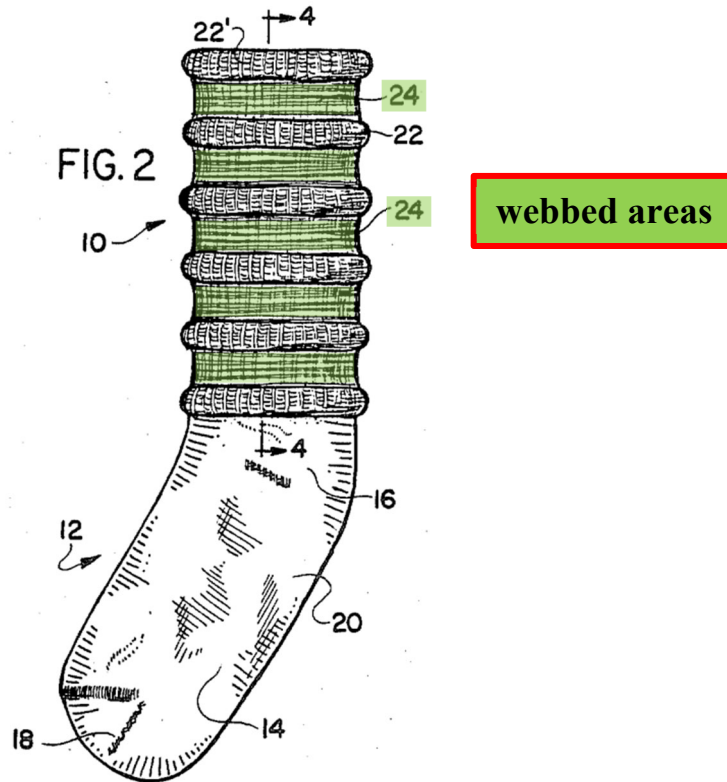
52. The '046 patent discloses that webbed areas (green) are connecting portions between tubular structures, as illustrated below in Figure 1. Ex.1001, 7:45-62.



Id., Fig. 1 (annotated).

53. Good discloses limitation 1[a]. According to Good, rib portions 22 are “in axially alternating arrangement along the cuff member 10,” and connecting portions 24 are “formed in the spaced groups of successive courses intermediate the

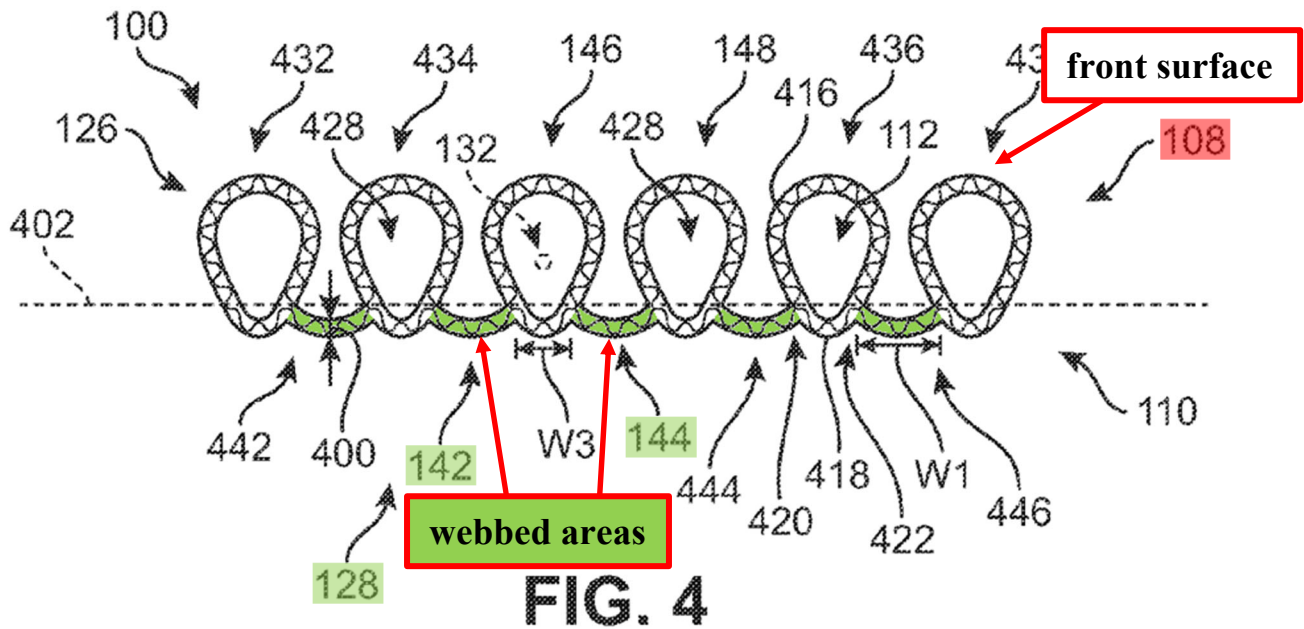
course groups forming the rib portions 22.” Ex.1005, 3:67-4:4, 4:25-31. The courses of the connecting portions 24 are knitted from at least one yarn. *Id.*, 4:35-37, 2:54-61, 12:34-44, Abstract, Claims 1, 5. The webbed areas (green) are shown below in Good’s Figure 2. *Id.*, 4:19-44.



Id., Fig. 2 (annotated).

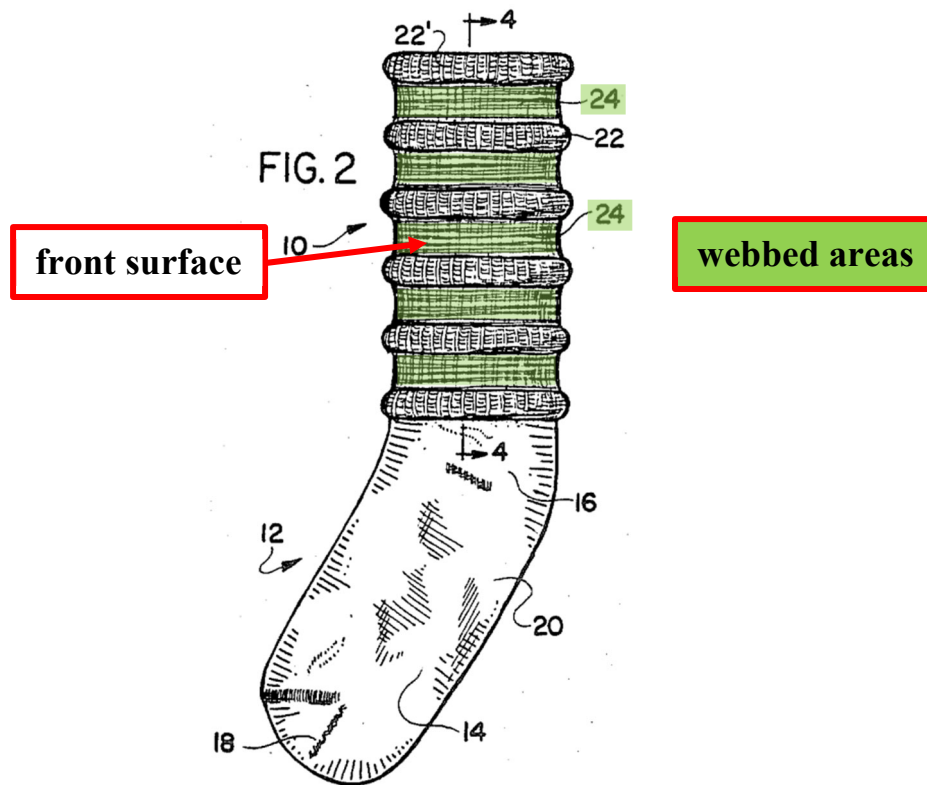
3. Limitation 1[a][i]: “the webbed areas having a front surface”

54. The '046 patent discloses that the knitted component 100 has a front surface 108, as illustrated below in Figure 4. Ex.1001, 6:35-37.



Id., Fig. 4 (annotated).

55. Good discloses limitation 1[b]. As depicted below in Good's Figure 2, the webbed areas (green) have a front surface that may be seen from outside of the sock/cuff member.

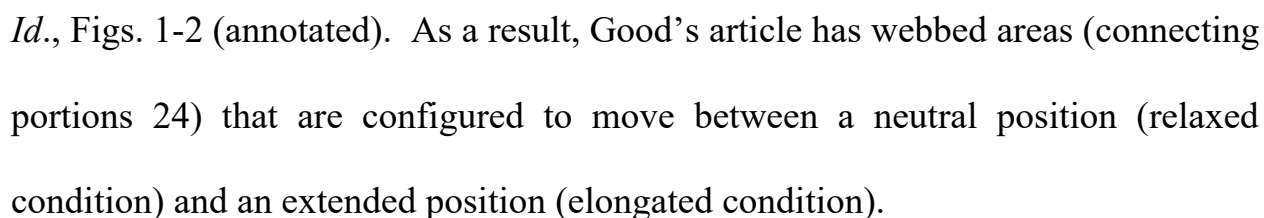


Ex.1005, Fig. 2 (annotated).

4. **Limitation 1[a][ii]: “the webbed areas configured to move between a neutral position and an extended position, the webbed areas being biased to move toward the neutral position”**

56. Good discloses limitation 1[a][ii]. Good’s “cuff member 10 is stretchable axially between a relaxed condition shown in FIG. 1 wherein the rib portions 22 are disposed closely axially adjacent one another making the connecting portions 24 generally not visible from outwardly of the cuff member 10 and an extended or elongated condition shown in FIG. 2 wherein the rib portions 22 and the connecting portions 24 are elongated with the rib portions 22 spaced axially from one another.” Ex.1005, 4:8-18; *see also id.*, 1:51-58, 2:54-61, 12:11-59, Abstract,

Figure 2 in which the webbed areas (green) are visible is shown below right.

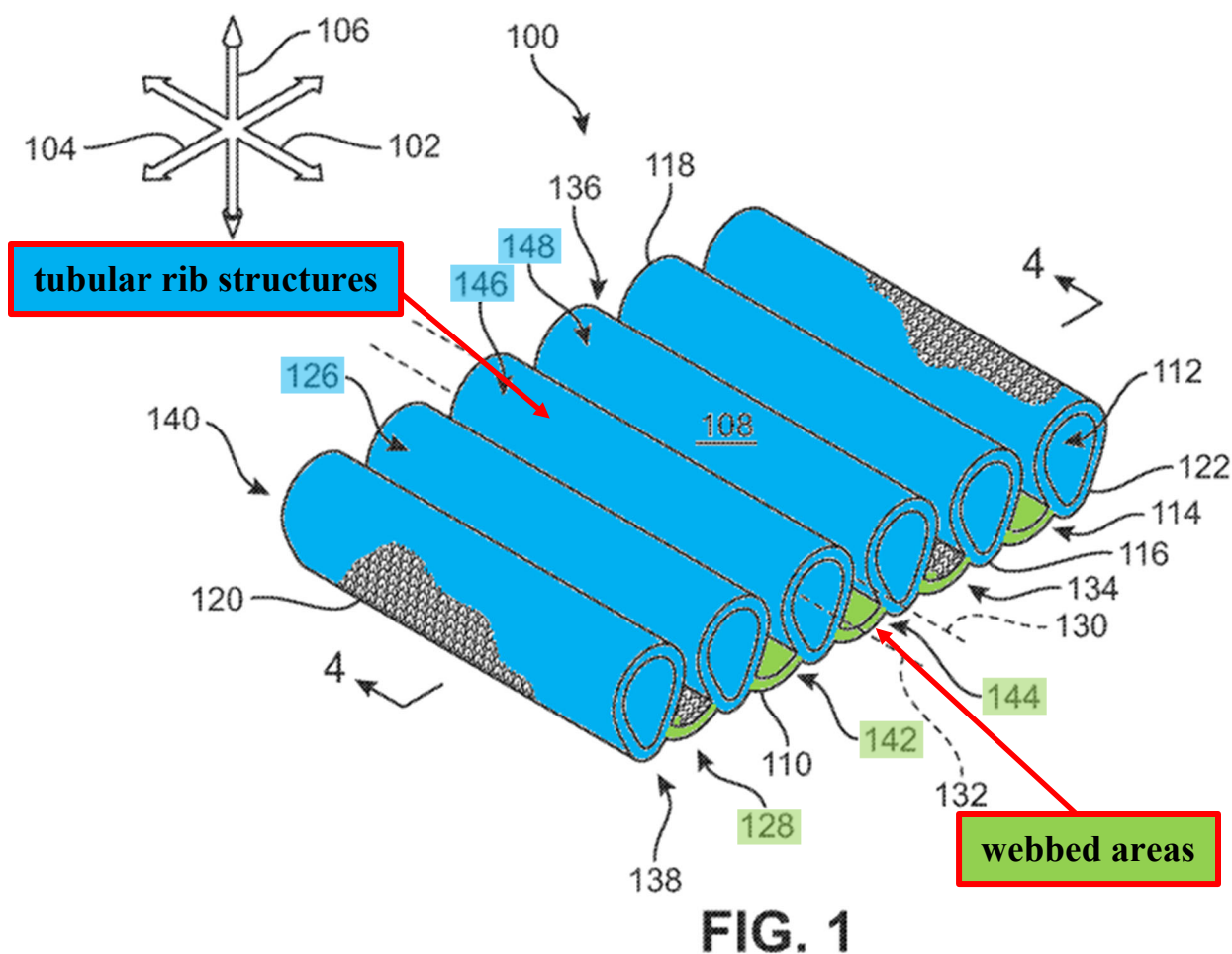


lululemon Ex. 1003
IPR Petition - USP 9,375,046

the article remains in the neutral position (relaxed condition), the webbed areas (connecting portions 24) are biased to return to the neutral position (relaxed condition).

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

58. According to the '046 patent, the “tubular structures” (blue) are positioned adjacent to and between the webbed areas (green), as shown below in Figure 1. Ex.1001, 7:14-30.



Id., Fig. 1 (annotated).

59. Good discloses limitation 1[b]. Good provides that “each rib portion 22 is formed of a selected predetermined number of courses sufficient to enable the axial ends of each rib portion 22 to roll substantially together in the relaxed condition.” Ex.1005, 12:34-44; *see also id.*, 12:55-59 (“the rib portions 22 maintain their outwardly rolled configuration”), 12:14-20 (“the rib portions 22 to roll axially upon themselves”). Good’s rib portions 22 are tubular structures, each having an elongate hollow structure and the shape of a tube. The rib portions 22 (blue) and connecting portions 24 (green) are depicted below in Figure 3 in a cross-section view. *Id.*, 3:16-18.

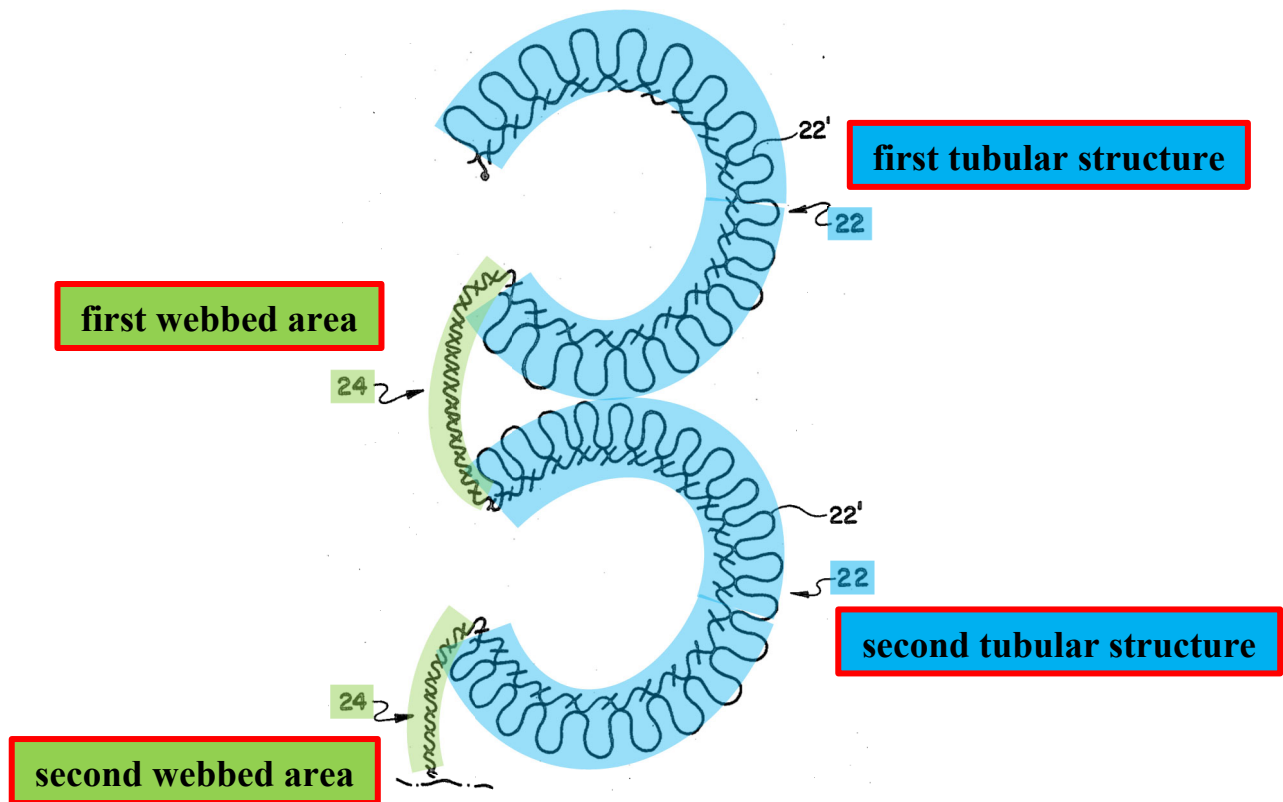


FIG.3

Id., Fig. 3 (annotated).

60. Good discloses that the tubular structures are “formed in several spaced groups of courses each including a plurality of successive courses.” *Id.*, 4:25-28. Good also discloses that the tubular structures are adjacent to the webbed areas. *Id.*, 4:28-31. Therefore, Good’s tubular structures (rib portions 22) include a plurality of courses and are adjacent to the webbed areas (connecting portions 24).

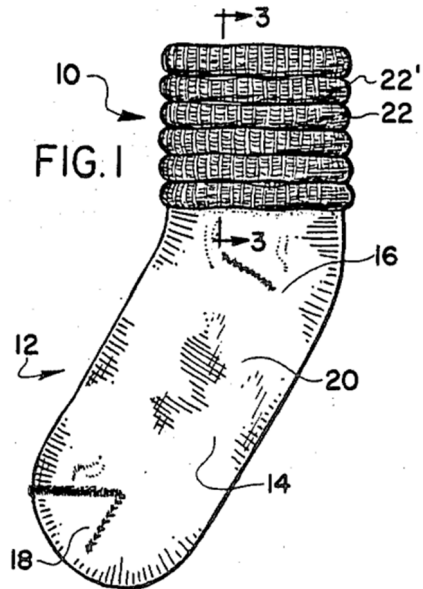
6. **Limitation 1[c]: “wherein at least one of the webbed areas or tubular structures is configured to stretch to move the webbed**

areas to the extended position in response to a force applied to the article”

61. Good discloses limitation 1[c]. As I explained for limitation 1[a][ii] in this ground, Good’s article can be in the relaxed condition where the tubular structures are positioned close together or the extended condition where the webbed areas between the tubular structures are exposed from stretching the article. Therefore, at least one of Good’s webbed areas or tubular structures is configured to stretch to move the webbed areas to the extended position (extended condition) responsive to a force applied to the article.

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

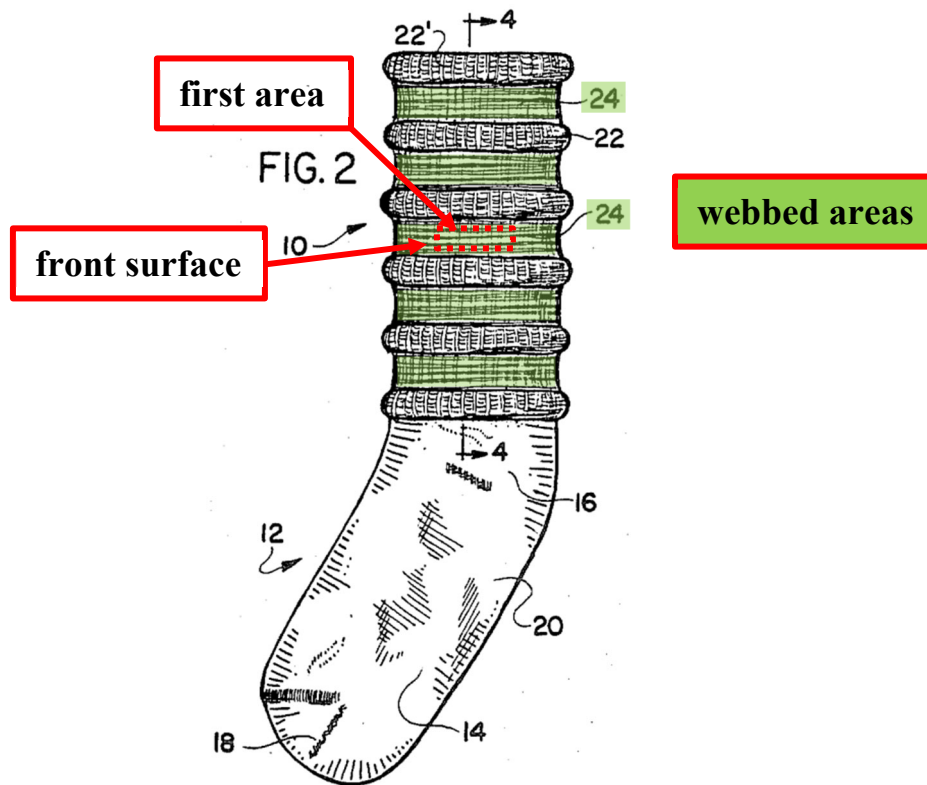
62. Good discloses limitation 1[d]. Good’s cuff member 10 is shown below in Figure 1 in the relaxed condition where the front surface of the webbed areas between the tubular structures are “generally not visible from outwardly of the cuff member 10.” Ex.1005, 4:8-18; *see also id.*, 1:51-58, 10:32-41, 12:34-44, Abstract, Claims 1, 5.



Id., Fig. 1. Therefore, in the neutral position (relaxed condition), a first area of the front surface of Good's webbed areas (connecting portions 24) is hidden from visual observation from a first viewing perspective.

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

63. Good discloses limitation 1[e]. Good's cuff member 10 is shown below in Figure 2 in the extended condition where the tubular structures are spaced apart. Ex.1005, 4:8-18. The front surface of the webbed areas (green) between the tubular structures includes a first area that is visible from outwardly of the cuff member 10. *Id.*, 4:8-18, 1:51-58, 12:44-55, Abstract, Claims 1, 5.



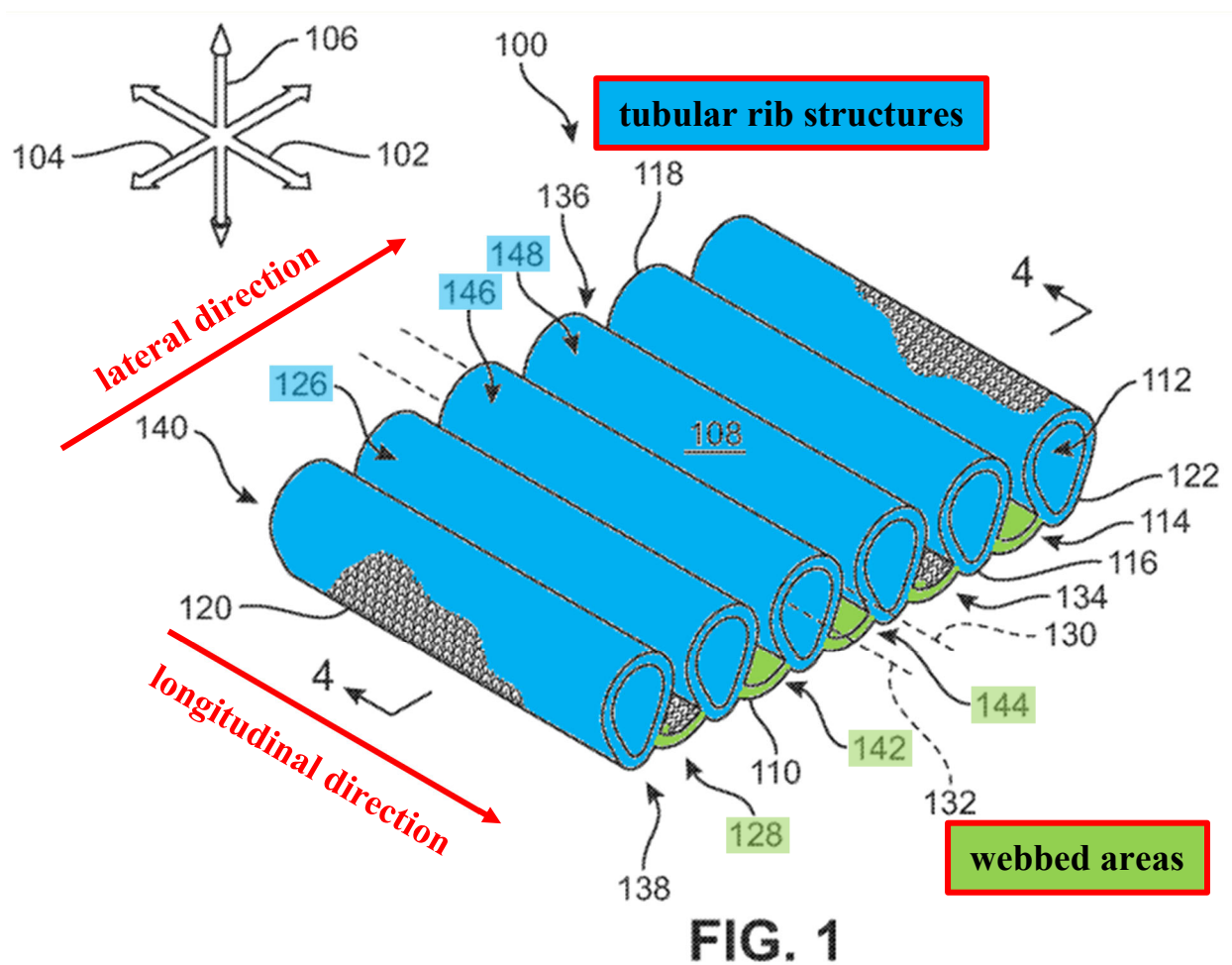
Id., Fig. 2 (annotated). Therefore, in the extended position (extended condition), a first area of the front surface of Good's webbed areas (connecting portions 24) is revealed for visual observation from the first viewing perspective.

C. Good Anticipates Claim 2

64. Claim 2 depends from claim 1 and recites “wherein the article is associated with a longitudinal direction and a lateral direction; wherein the plurality of webbed areas and the plurality of tubular structures extend along the longitudinal direction, wherein the plurality of webbed areas and the plurality of tubular structures are spaced apart in the lateral direction, and wherein the article is

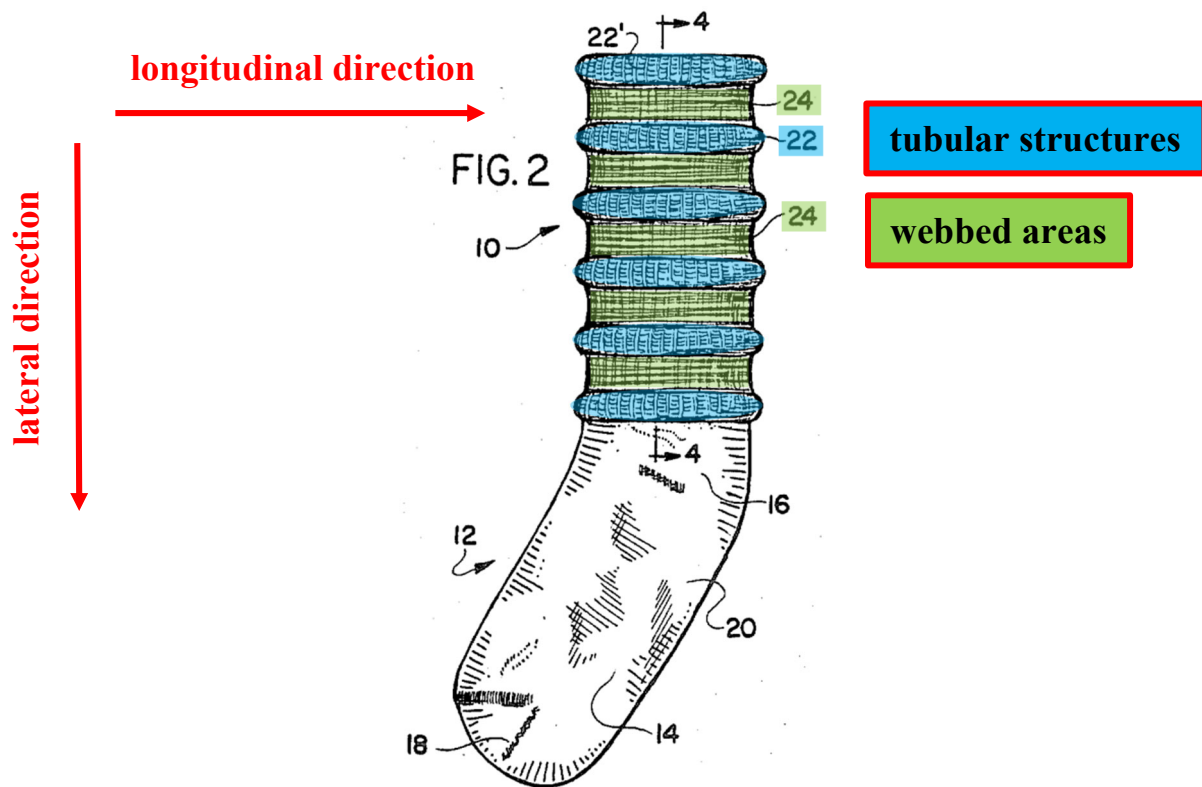
configured to stretch in the lateral direction between the neutral position and the stretched position, the article biased toward the neutral position.”

65. According to the '046 patent, the longitudinal direction 102 can be a direction parallel to the axes of the tubular structures (blue), and the lateral direction 104 can be a direction perpendicular to the axes of the tubular structures. Ex.1001, 6:28-32. The longitudinal direction 102 and the lateral direction 104 are shown below in Figure 1.



Id., Fig. 1 (annotated). For reference purposes, the knitted component 100 is illustrated with respect to a Cartesian coordinate system in Figures 1-7 of the '046 patent. Specifically, a longitudinal direction 102 (direction of the wales), a lateral direction 104 (direction of the courses), and a thickness direction 106 of knitted component 100 are shown. *Id.*, 6:28-32. The '046 patent's description of this coordinate system is contrary to the common understanding of a POSA. In the industry, a POSA would understand the longitudinal direction as representing the direction that the fabric comes off a knitting machine after a row or knitting loops ("courses") are formed. A POSA would understand that the lateral direction would be referred to as the direction that the knitted loops are formed as a single yarn moves from knitting needle to knitting needle in a horizontal direction and that each knitting needle forms a "wale". However, for purposes of my analysis in this declaration, I have adopted the unconventional coordinate system described by the '046 patent.

66. Good discloses the limitations of claim 2. Figure 2 below from Good shows a "side elevational view of the cuff member [10] and sock of FIG. 1, showing the cuff member in its elongated condition." Ex.1005, 3:13-15.



Id., Fig. 2 (annotated). It can be seen that Good's article is associated with longitudinal and lateral directions and that the tubular structures (blue) and the webbed areas (green) extend along the longitudinal direction and are spaced apart in the lateral direction.

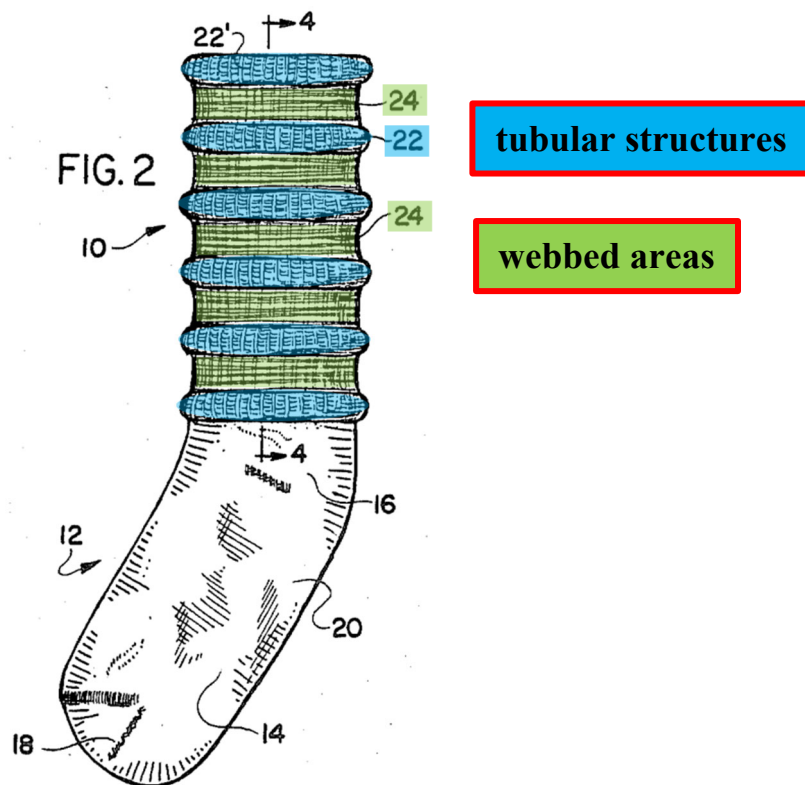
67. As I explained for limitation 1[a][ii] in this ground, Good's article stretches between the neutral position (relaxed condition) and the extended position (extended condition) and is biased to the neutral position, and the webbed areas between the tubular structures are exposed in the extended position. Therefore, Good discloses that its article is stretched in the lateral direction from the neutral

position to the extended position so that the webbed areas are exposed in the extended position.

D. Good Anticipates and Renders Obvious Claim 3

68. Claim 3 depends from claim 2 and recites “wherein the plurality of webbed areas and the plurality of tubular structures are disposed in an alternating manner across the majority of the article.”

69. Good discloses the limitations of claim 3. Figure 2 below from Good depicts the webbed areas (connecting portions 24) and the tubular structures (rib portions 22) relative to a combination of the cuff member 10 and the sock 12. Ex.1005, 3:49-53.



Id., Fig. 2 (annotated). This figure shows that the webbed areas and tubular structures are disposed in an alternating manner across the majority of the combination of the cuff member and the sock. Good also discloses that the cuff member 10 may be desirably lengthened to include additional tubular structures and additional webbed areas, which can cover more of a wearer's leg. *Id.*, 10:42-48. Additionally, Good's cuff member 10 is adapted for use in leg warmers. *Id.*, 3:53-57. In such an adaption of the cuff member 10, the cuff member 10 would desirably extend across the majority of the leg warmer so that the cuff member 10 provides warmth to a majority of the wearer's leg. Therefore, Good discloses all limitations of claim 3.

70. Moreover, it would have been obvious to have the portion of Good's article with the tubular structures and webbed areas cover the majority of the article. Good describes alternately forming successive additional rib portions 22 and connection portions 24 "in the same manner as described above for the first rib and connecting portions 22, 24 to produce the cuff member 10 of a desired length." *Id.*, 10:42-48. A POSA would have been motivated to increase the length of the cuff member 10 in order to realize known benefits, including adjusting the aesthetic of the article so that more of the article has the aesthetic of the cuff member 10, increasing the cushioning or warming provided by the cuff member 10 by constructing the article to largely be formed of the cuff member 10 and its

accompanying cushioning and warming characteristics, or customizing the fit or feel of the article for different wearers so that wearers who prefer the fit and feel of the cuff member 10 enjoy that fit and feeling from the majority of the article. Good also provides that the cuff member 10 is usable in articles like leg warmers, which a POSA would have understood should be formed with a majority of the article as the cuff member 10 so that the cuff member 10 extends along a substantial portion of a wearer's leg and provides warmth. *Id.*, 3:53-57. Therefore, Good also renders obvious the limitations of claim 3.

E. Good Anticipates Claim 7

71. Claim 7 depends from claim 1 and recites “wherein the plurality of webbed areas include one of a front jersey knit pattern and a reverse jersey knit pattern.”

72. Good discloses the limitations of claim 7. Each of Good's webbed areas (connecting portions 24) “includes a plurality of courses having in each thereof the ground yarn knitted in a single jersey stitch construction and the elastic yarn inlaid periodically in the stitches of the ground yarn.” Ex.1005, 1:68-2:4; *see also id.*, 2:54-61, 4:23-25, 5:1-6, 10:32-41, Abstract, Claim 5. A POSA would have understood that jersey is “[a] plain knit fabric made on a single set of knitting needles; all the knitted loops are pulled from the face side to the back side of the fabric so the two sides look different.” Ex.1011, 4. A jersey knit pattern refers to

75. Good discloses the limitations of claim 16. Each of Good's tubular structures (rib portions 22) comprises a first layer (grey) and a second layer (orange) as depicted in below Figure 3. Ex.1005, 3:16-18, 3:67-4:8.

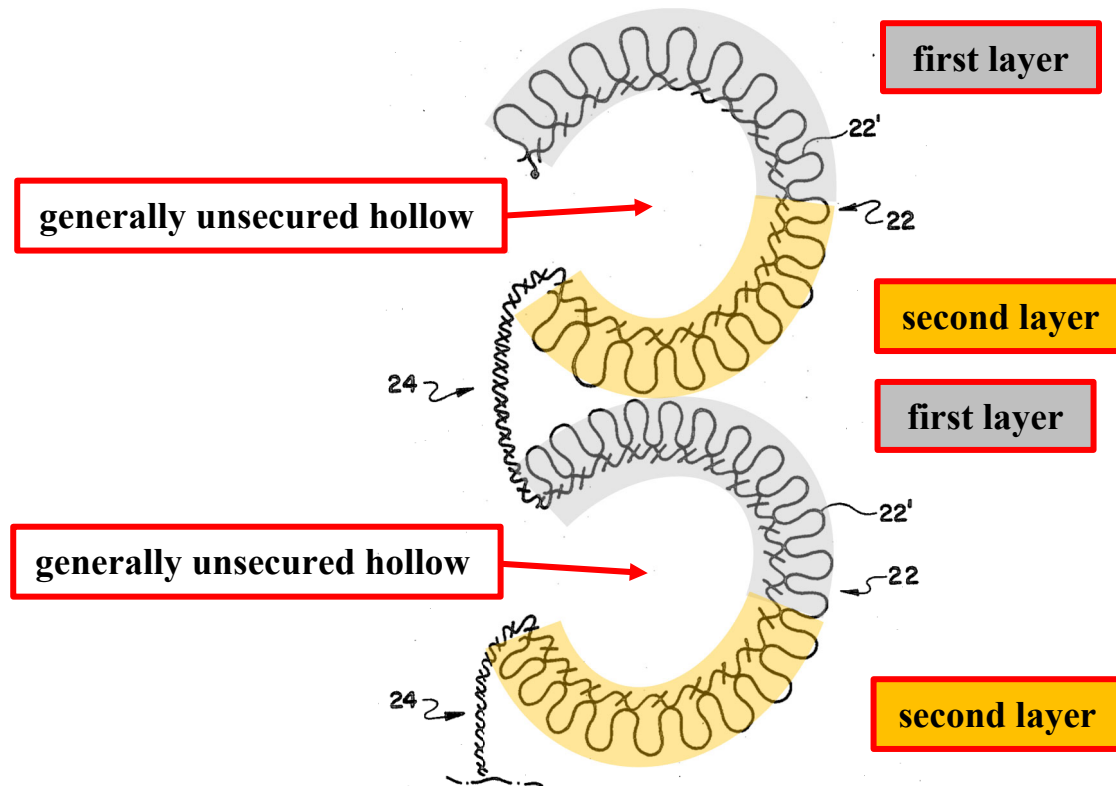


FIG.3

Id., Fig. 3 (annotated). As can be seen from this figure, the first and second layers are co-extensive (for example, equal in size, sharing a common boundry, or having same extent or coverage) and overlapping. In addition, Good provides that “the rib portions 22 [] roll axially upon themselves” and “the axial ends of each rib portion 22 to roll substantially together in the relaxed condition.” *Id.*, 12:14-20, 12:34-44; *see also id.*, 12:55-59. As a result, each of the tubular structures also comprises a

central area which is generally unsecured to form a hollow between the first and second layers of each tubular structure. Therefore, Good discloses the limitations of claim 16.

G. Good Anticipates Claim 17

76. Claim 17 depends from claim 1 and recites “wherein the article includes a knitted component, the knitted component comprising the plurality of webbed areas and the plurality of tubular structures.”

77. Good discloses the limitations of claim 17 for the reasons I explained above for the preamble of claim 1 and limitations 1[a] and [b] in this ground. *See also* Ex.1005, 1:59-2:4.

H. Good Anticipates Claim 18

78. Claim 18 depends from claim 17 and recites “wherein the knitted component is formed of unitary knit construction.”

79. According to the '046 patent, a knitted component is “defined as being formed of ‘unitary knit construction’ when formed as a one-piece element through a knitting process.” Ex.1001, 5:56-63. I understand that the parties agreed in the district court case that this definition is the correct construction for “unitary knit construction.” Ex.1014, 11.

80. Good discloses the limitations of claim 18. Good provides that “the first connecting portion 24 is knitted integrally with the first rib portion 22” and

“several successive additional rib portions 22 and connecting portions 24 are alternately formed in the same manner as described [] for the first rib and connecting portions 22, 24.” Ex.1005, 10:5-7, 10:42-48. In addition, Good describes that its “method includes the knitting of a socktype foot portion integrally with the cuff member to form the aforementioned preferred anklet-type sock.” *Id.*, 3:3-6; *see also id.*, 1:59-2:24. Therefore, Good’s knitted component is integrally knitted and formed of a unitary knit construction.

I. Good Anticipates Claim 20

81. The limitations of claim 20 are all included in claim 1. I address all of the limitations of claim 1 above. For ease of reference, I provide the following table that indicates which limitations of claim 1 correspond to each limitation of claim 20. Good discloses an article having all limitations of claim 20 for the reasons I detailed for claim 1 in this ground.

Claim 20	Claim 1
20. An article comprising:	Preamble
a plurality of webbed areas having a front surface,	1[a] and 1[a][i]
the webbed areas configured to move between a neutral position and an extended position, the webbed areas being biased to move toward the neutral position, and	1[a][ii]
a plurality of tubular structures that are adjacent to the webbed areas, the tubular structures;	1[b]

wherein at least one of the webbed areas or tubular structures is configured to stretch to move the webbed areas to the extended position in response to a force applied to the article	1[c]
wherein in the neutral position, a first area of the front surface is hidden from visual observation from a first viewing perspective, and	1[d]
wherein in the extended position, the first area of the front surface is revealed for visual observation from the first viewing perspective.	1[e]

IX. GROUND 2: MUNSING ANTICIPATES CLAIMS 1–3, 7, 17, 18, AND 20

A. Interpretation of Tubular Structures

82. The '046 patent includes independent claims 1 and 20 that each recite “a plurality of tubular structures.” I understand that in the parallel district court case Patent Owner states that “a plurality of tubular structures” should be construed as “tube-*like* structures.” Ex.1014, 3-6 (emphasis added). I also understand that Patent Owner suggests in the district court case that “tube-*like*” does not require the structures to be hollow like a tube.

83. I am informed Patent Owner asserts that its proposed “tube-*like*” construction for the “tubular structures” limitation is so broad as to encompass a knitted, ribbed article that may be stretched or separated to reveal portions between the ribs. If the '046 patent claims were interpreted to have such scope, claims 1–3,

7, 17, 18, and 20 are also disclosed by knitted articles that have been known since the 1800's. In this ground, I detail how Munsing (Ex.1006), which issued in 1888, discloses the limitations of these claims if Patent Owner's interpretation is accepted.

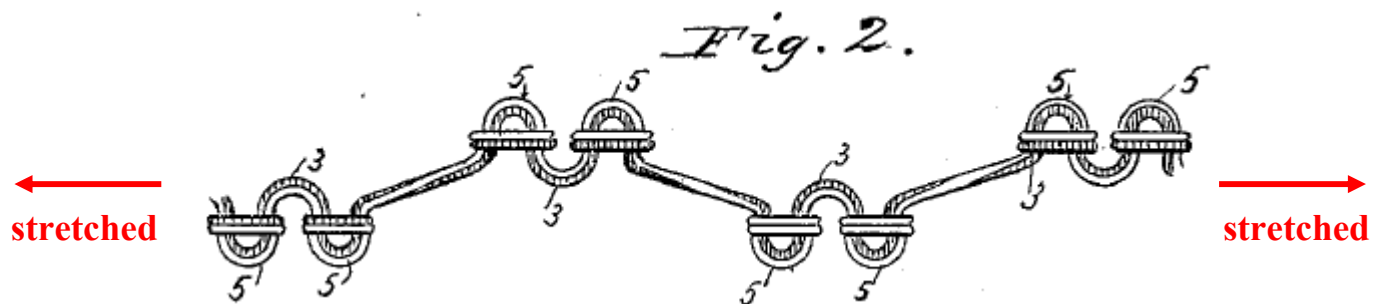
B. Summary of Munsing (Ex.1006)

84. I understand that Munsing was neither considered nor cited during prosecution of the '046 patent. Ex.1001. Munsing describes knitted, ribbed fabrics that may be used in articles like underwear. Ex.1006, 1:7-10; *see also id.*, 1:36-44, 1:80-85. Munsing's ribs are positioned on one side of the article and can be stretched or separated so that parts of the underside of the ribs on the article's opposite side are revealed. *Id.*, 1:99-2:4.

85. Munsing describes fabrics that are "heavy enough to be sufficiently warm ... [and] have a fine, attractive, and handsomely finished outer surface and a soft but smooth under surface that will not irritate the flesh of the wearer." *Id.*, 1:11-17. As one example, a "fabric that is composed entirely of wool possesses the requisite weight and is sufficiently warm for this purpose; but it cannot be given a finely-finished outer surface." *Id.*, 1:18-35. To achieve such a finely-finished outer surface, Munsing discloses that a "fabric that is formed entirely of silk possesses the requisite handsome finish and smooth under surface, but is too light to be worn by the majority of people in cold weather." *Id.*

86. One improvement proposed by Munsing is to provide a fabric “formed of a combination of wool or other heavy inexpensive material and silk or other fine or superior material ... [in which] the silk or superior thread is thrown to the surface on both sides of the fabric.” *Id.* This fabric is referred to by Munsing as a “double-ribbed jersey fabric.” *Id.*, 1:39-44.

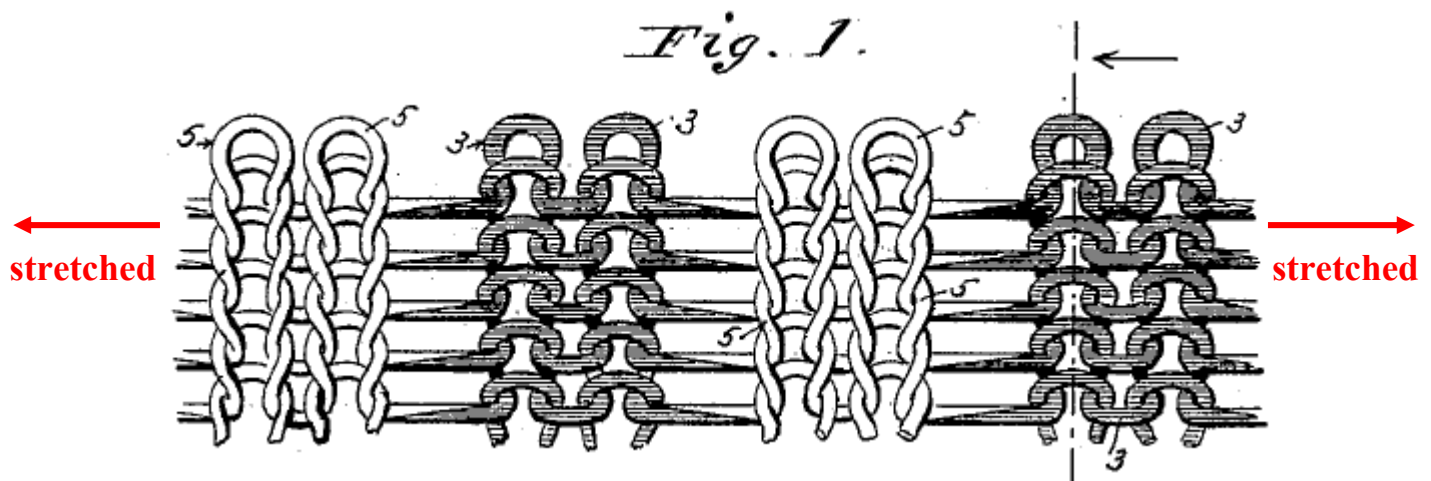
87. Figure 2 below shows a top edge view of Munsing’s fabric with ribs on both sides and in a stretched configuration. *Id.*, 2:1-4.



Id., Fig. 2 (annotated). As can be seen, woolen thread 3 is positioned on the inside of the ribs while silk thread 5 is positioned on the outer surface of the ribs on both sides of the fabric. *See also id.*, 1:28-35, 1:80-85, 1:90-91, 2:26-37. If Munsing’s fabric “is stretched as the garments are worn, the uncovered portions of the woolen thread [3] between the ribs will be exposed.” *Id.*, 2:1-4. On the other hand, “[w]hen the fabric is removed from the needles and is in its normal condition, the ribs lie close together and the fabric has the appearance of a silk surface.” *Id.*, 1:99-104. Munsing explains that this appearance of the silk surface is how the fabric looks when on display for sale. *Id.* In this normal condition, silk thread 5 hides woolen

thread 3 and prevents woolen thread 3 from contacting the flesh, so the fabric will have “a finished glossy appearance” and “a smooth surface that may be worn next to the flesh without irritation.” *Id.*, 1:93-102, 2:10-37; *see also id.*, 1:61-65.

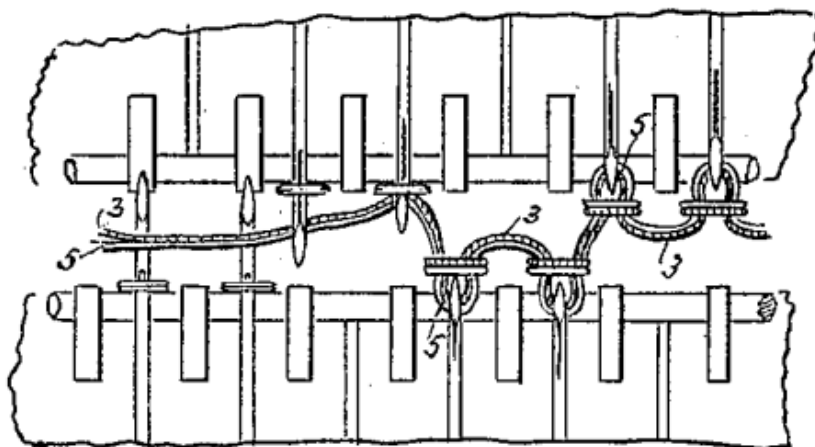
88. Munsing’s fabric is depicted in the stretched position and in a plan view below in Figure 1.



Id., Fig. 1 (annotated). According to Munsing, “silk [thread 5] of the tops of the ribs on the under surface of the garments will be against the flesh of the wearer when the garments are in use, while the uncovered portions of the woolen thread [3], being at the bottoms of the valleys between the ribs, will not ordinarily come against the flesh.” *Id.*, 2:10-16.

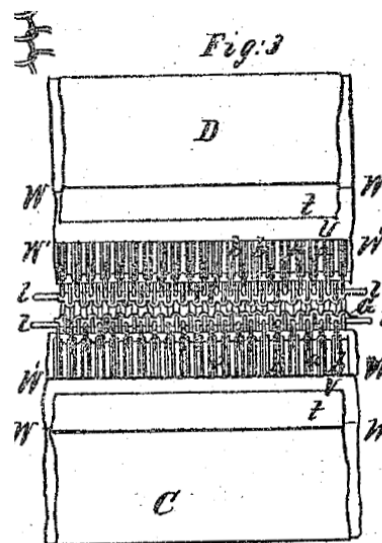
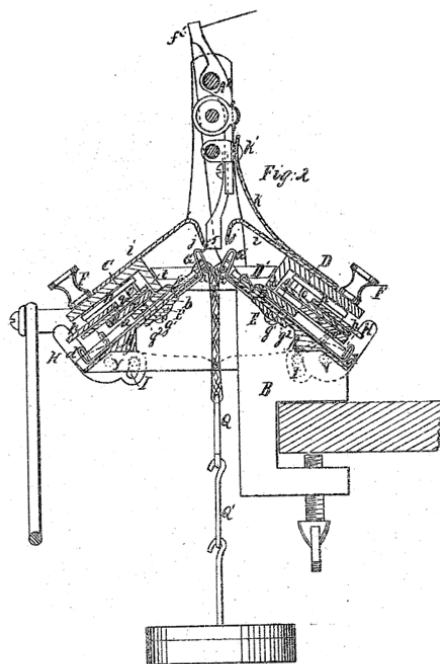
89. Munsing also discloses the knitting machine configuration used to produce the rib fabrics that are disclosed. *Id.*, 1:55-56.

Fig. 6.



Id., Fig. 6.

90. Munsing's fabric can be knitted on a "Lamb" straight machine. *Id.*, 1:66-71. The Lamb straight machine was illustrated and described at least as early as 1865 in an issued U.S. patent (U.S. Patent No. 50369). The Lamb straight machine has a similar mechanical configuration to Figure 9 of the '046 patent. Below are drawings from U.S. Patent No. 50369 which illustrate this.



91. The weft knitted fabric illustrated in Figure 6 of Munsing is a 2 x 2 weft rib fabric. The simplest weft rib fabric is 1 x 1. Ex.1013, 22. “The first rib frame was invented by *Jedediah Strutt* of Derby, England in 1755, who used a second set of knitting needles to pick up and knit the sinker loops of the first set.” *Id.* According to Spencer (Ex.1013), which published in 2001, this fabric is “now normally knitted with two sets of latch needles.” *Id.* Such knitting with latch needles is illustrated in the following two figures.

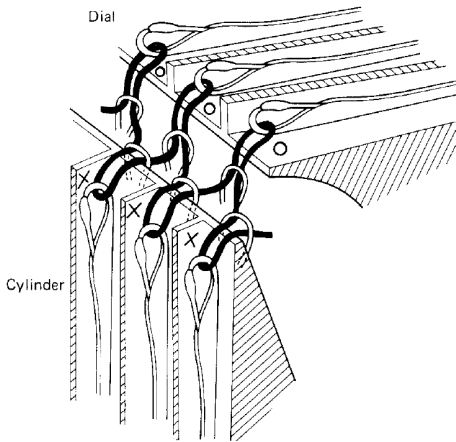


Fig. 7.7 Structure of 1 × 1 rib.

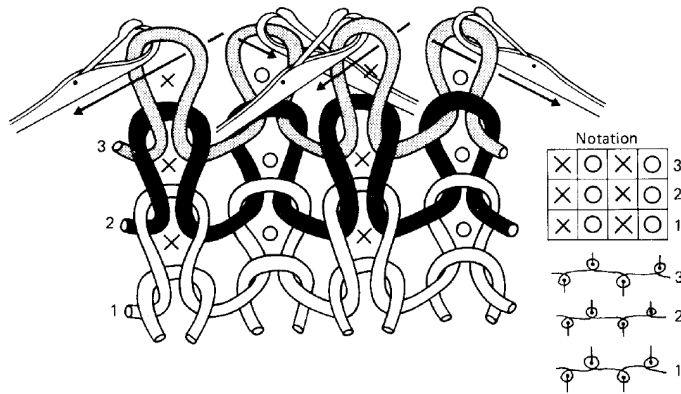


Fig. 7.8 Face and reverse loop wales in 1 × 1 rib.

Id., 22-23.

C. Munsing Anticipates Claim 1

92. Munsing’s article of apparel is composed of a knitted fabric with ribbed structures. Ex.1006, 1:7-10, 1:36-44, 1:80-85. The article stretches to an extended position where part of a webbed area’s front surface is revealed between the ribs.

Id., 1:99-2:4.

93. I apply the broad claim interpretation proposed by the Patent Owner in the district court in my analysis of this ground. As a result, I regard “ribs” or “rib structures” to be “tubular structures” for my analysis and detail how Munsing discloses an article having claim 1’s limitations under this broad claim interpretation.

1. Preamble of Claim 1

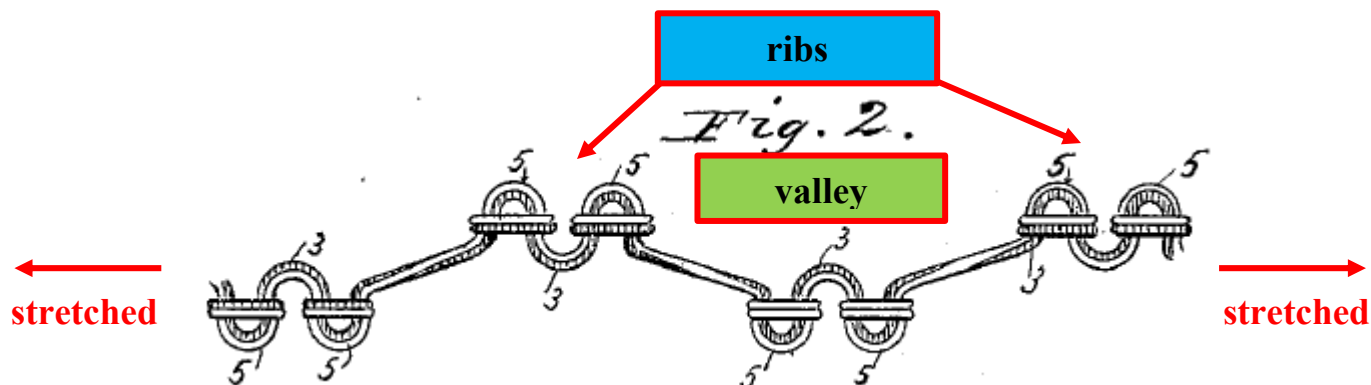
94. The preamble of claim 1 recites “[a]n article.” The ’046 patent specifies various apparel, including undergarments, as a type of article covered by the patent’s disclosure. Ex.1001, 4:34-40. The disclosed articles in Munsing include “knit

fabrics that are designed especially for use in the manufacture of underwear.”

Ex.1006, 1:7-10.

2. Limitation 1[a]: “a plurality of webbed areas that include a plurality of courses formed from a first yarn”

95. Munsing discloses limitation 1[a]. Munsing’s fabric is formed of ribs and valleys between the ribs. Ex.1006, 2:26-47, 2:10-16 (“woolen thread [3], being at the bottoms of the valleys between the ribs, will not ordinarily come against the flesh.”). The valleys between the ribs are connecting portions between the ribs and thus also are webbed areas between the ribs.



Id., Fig. 2 (annotated).

96. Munsing provides that its fabric is knit from at least one yarn. Ex.1006, 2:48-65. The fabric’s yarn forms rows of loops, which are courses. *Id.*, Figs. 1-5; Ex.1011, 3 (“rows of loops or stitches running across the width of a knitted fabric”); *see also e.g.*, Ex.1007, [0048] (“Knit element 131 is formed from at least one yarn

that is manipulated ... to form a plurality of intermeshed loops that define a variety of courses and wales.”). Munsing’s webbed areas accordingly include courses.

97. Therefore, Munsing discloses a plurality of webbed areas (valleys between ribs) that include a plurality of courses formed from a first yarn.

3. Limitation 1[a][i]: “the webbed areas having a front surface”

98. Munsing discloses limitation 1[a][i]. Munsing states that “[t]he two surfaces of the fabric are substantially alike, and either may form the outer surface of the garment when in use.” Ex.1006, 1:90-92. As I discussed for limitation 1[a] in this ground, I treat the side of Munsing’s fabric that is referred to as having the ribs as being a front surface. The valleys between the ribs on that same side of Munsing’s fabric additionally have a front surface. Therefore, Munsing discloses the webbed areas (valleys between ribs) having a front surface.

4. Limitation 1[a][ii]: “the webbed areas configured to move between a neutral position and an extended position, the webbed areas being biased to move toward the neutral position”

99. Munsing discloses limitation 1[a][ii]. Munsing’s fabric moves between a normal condition and a stretched condition. Ex.1006, 1:99-2:4. “When the fabric is removed from the needles and is in its normal condition, the ribs lie close together.” *Id.*, 1:99-102. “[T]his will generally be the condition of the fabric when the garments are exposed for sale.” *Id.*, 1:102-2:1. “When the fabric is stretched as the garments are worn, the uncovered portions of the woolen thread between the ribs

will be exposed.” *Id.*, 2:1-4. Therefore, Munsing’s webbed areas (valleys between ribs) move between a neutral position (normal condition) and an extended position (stretched condition).

100. In order to stretch Munsing’s article and webbed areas, an applied force is required. *Id.*, 2:1-4. Without such an applied force, Munsing’s article and webbed areas (valleys between ribs) remain in the neutral position (normal condition) and are accordingly biased to return to the neutral position (normal condition).

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

101. Munsing discloses limitation 1[b]. As I explained for limitation 1[a] in this ground, Munsing provides that its fabric is formed of ribs and valleys (webbed areas) between the ribs. The ribs separating the valleys are tubular structures positioned adjacent to the webbed areas (valleys between ribs) under Patent Owner’s broad claim interpretation.

102. Munsing discloses that its fabric is knitted and includes rows of loops, which are known as courses. Ex.1006, 2:48-65, Figs. 1-5; Ex.1011, 3; *see also e.g.*, Ex.1007, [0048]. Munsing’s tubular structures (ribs) are part of the knit fabric and accordingly include courses.

103. Therefore, Munsing discloses a plurality of tubular structures (ribs) that are adjacent to the webbed areas (valleys between ribs), the tubular structures (ribs) including a plurality of courses.

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

104. Munsing discloses limitation 1[c] for the reasons I explained for limitation 1[a][ii] in this ground. Munsing’s fabric “is stretched as the garments are worn, the uncovered portions of the woolen thread [3] between the ribs will be exposed.” Ex.1006, 2:1-4.

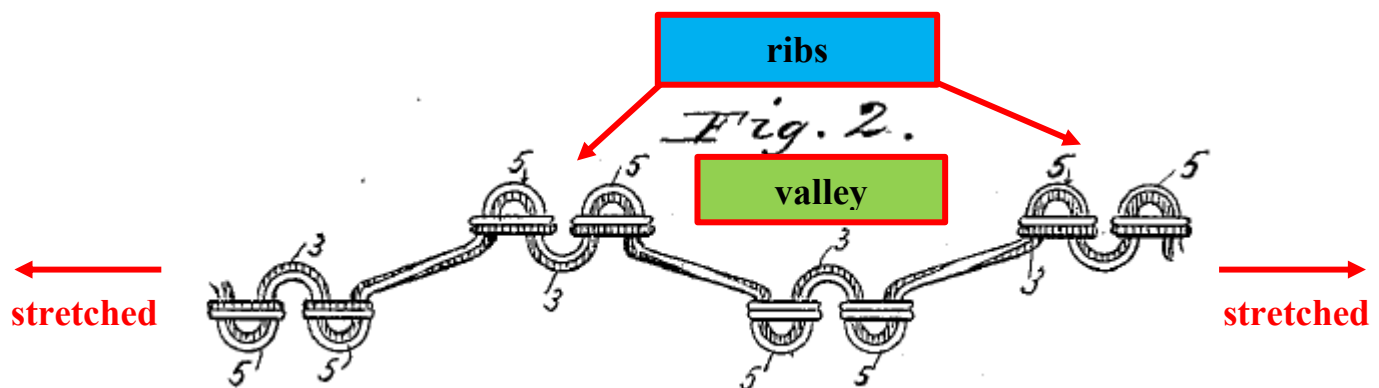
7. Limitation 1[d]: “wherein in the neutral position, a first area of the front surface is hidden from visual observation from a first viewing perspective”

105. Munsing discloses limitation 1[d]. In the normal or unstretched condition, Munsing’s “ribs lie close together and the fabric has the appearance of a silk surface.” Ex.1006, 1:99-102. This appearance arises from the silk thread “lying over the [woolen thread], giv[ing] [the fabric] a finished glossy appearance, and form[ing] a smooth surface that may be worn next to the flesh without irritation.” *Id.*, 1:93-98. Munsing describes that when the fabric “is stretched as the garments are worn, the uncovered portions of the woolen thread [3] between the ribs will be exposed.” *Id.*, 2:1-4. The bottoms of the valleys between the ribs are at least partly hidden from a first viewing perspective in the normal (neutral) condition and

accordingly are a first area on the front surface that is at least partly hidden from the first viewing perspective in the normal (neutral) condition. Therefore, Munsing discloses the neutral position (normal condition) in which a first area of the front surface (valleys between ribs) is hidden from visual observation from a first viewing perspective.

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

106. Munsing discloses limitation 1[e]. According to Munsing, “[w]hen the fabric is stretched as the garments are worn, the uncovered portions of the woolen thread between the ribs will be exposed.” Ex.1006, 2:1-4. The uncovered portions are the valleys between the ribs. The uncovered portions are also at least partly revealed from the first viewing perspective in the stretched condition as illustrated in below Figure 2.

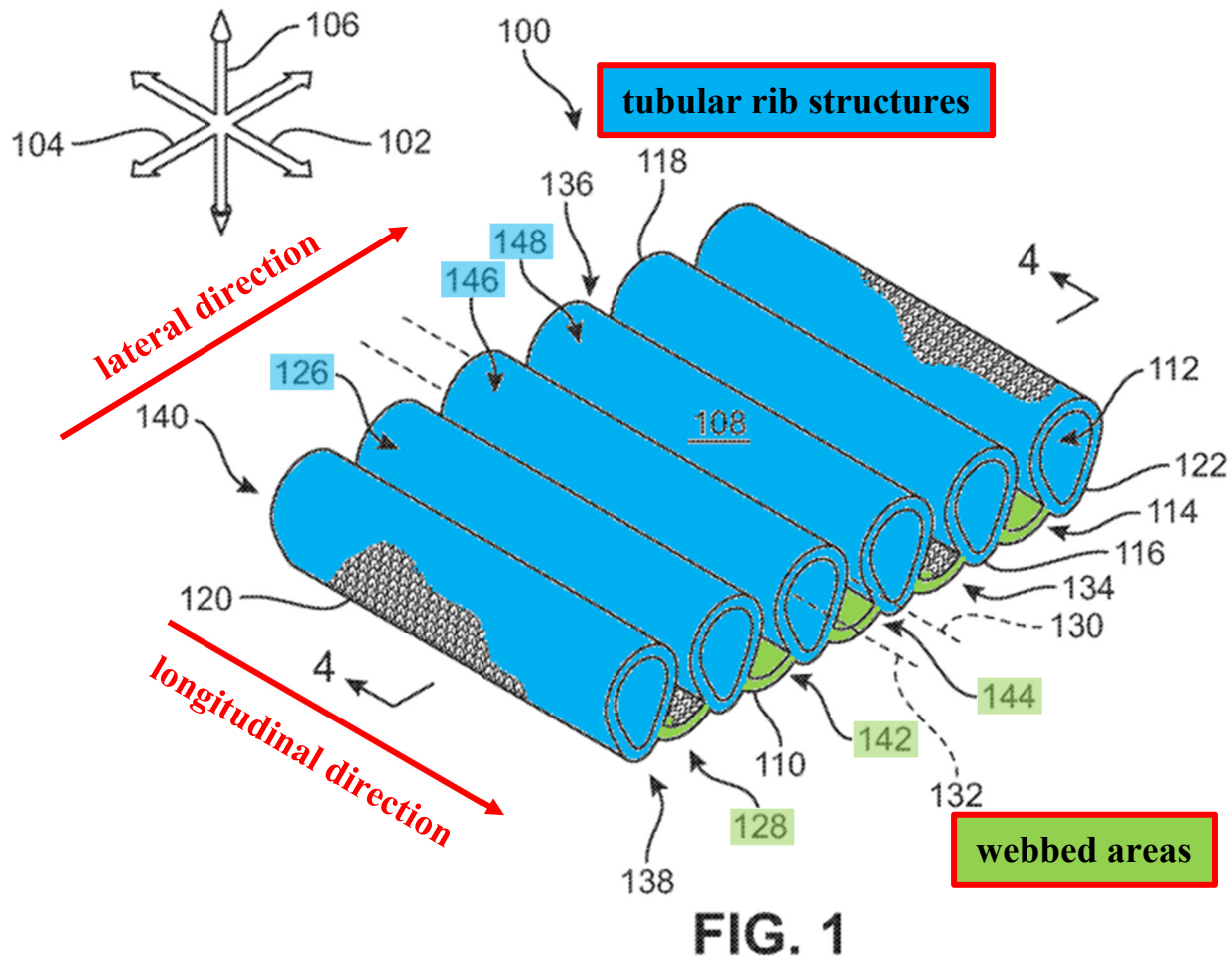


Id., Fig. 2 (annotated). Accordingly, Munsing discloses the extended position (stretched condition) in which the first area of the front surface (valleys between ribs) is revealed for visual observation from the first viewing perspective.

D. Munsing Anticipates Claim 2

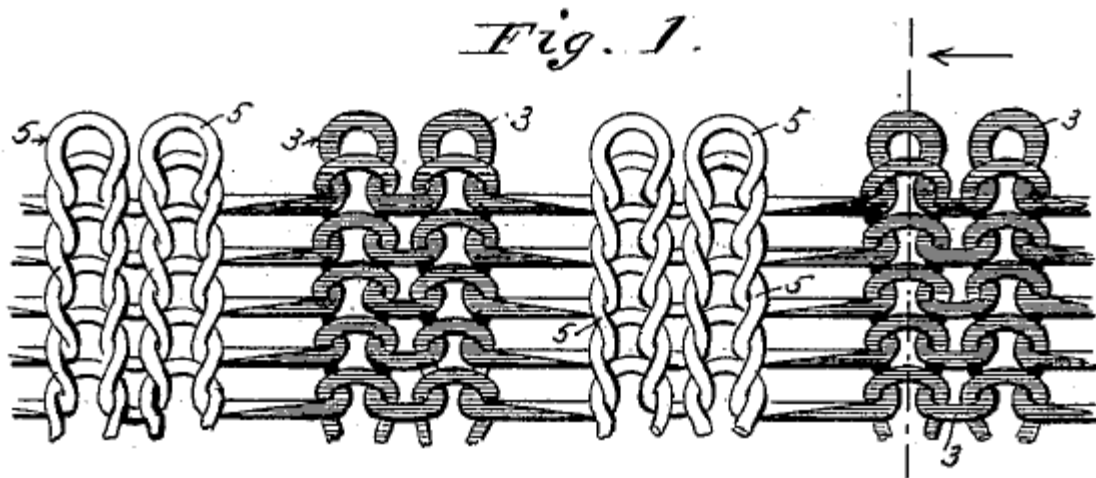
107. Claim 2 depends from claim 1 and recites “wherein the article is associated with a longitudinal direction and a lateral direction; wherein the plurality of webbed areas and the plurality of tubular structures extend along the longitudinal direction, wherein the plurality of webbed areas and the plurality of tubular structures are spaced apart in the lateral direction, and wherein the article is configured to stretch in the lateral direction between the neutral position and the stretched position, the article biased toward the neutral position.”

108. According to the '046 patent, the longitudinal direction 102 can be a direction parallel to the axes of the tubular structures (blue), and the lateral direction 104 can be a direction perpendicular to the axes of the tubular structures. Ex.1001, 6:28-32. The longitudinal direction 102 and the lateral direction 104 are shown below in Figure 1. Although this description of “longitudinal” and “lateral” directions is contrary to the common understanding of how those terms are used in the industry, I have applied this definition of these terms from the '046 patent in my analysis.



Id., Fig. 1 (annotated).

109. Munsing discloses the limitations of claim 2. As I explained in detail for limitations 1[a] and 1[b] in this ground, Munsing discloses its fabric is formed of webbed areas (valleys between ribs) and tubular structures (ribs). Those webbed areas and tubular structures extend along a longitudinal direction of the fabric and are also spaced apart in a lateral direction for the fabric as shown below in Figure 1.



Ex.1006, Fig. 1.

110. As I explained for limitation 1[a][ii] in this ground, Munsing discloses that its webbed areas (valleys between ribs) move between the neutral position (normal condition) and the extended position (stretched condition) responsive to the applied force to the article and that its article is biased to return to the neutral position (normal condition). Munsing discloses that “the uncovered portions of the woolen thread between the ribs will be exposed” in the stretched condition, confirming that Munsing’s article stretches in the lateral direction (direction in which ribs and valleys between ribs are spaced apart) between the neutral position and the stretched position. *Id.*, 2:1-4.

111. Therefore, Munsing discloses claim 2.

E. Munsing Anticipates Claim 3

112. Claim 3 depends from claim 2 and recites “wherein the plurality of webbed areas and the plurality of tubular structures are disposed in an alternating manner across the majority of the article.”

113. Munsing discloses the limitations of claim 3. An undergarment may be formed of the fabric described in Munsing. Ex.1006, 2:4-25. Munsing explains that it is “especially desirable that [the fabric designed for underwear] should present an attractive appearance when not in use, thus making them more salable.” *Id.*, 2:4-9. Munsing additionally provides that “[t]he silk surface of the tops of the ribs on the under surface of the garments will be against the flesh of the wearer when the garments are in use, while the uncovered portions of the woolen thread, being at the bottoms of the valleys between the ribs, will not ordinarily come against the flesh.” *Id.*, 2:10-16. Further, “the silk or superior thread appears on or forms the tops of the ribs on both sides of the fabric throughout the entire fabric.” *Id.*, 2:66-81. Therefore, Munsing repeatedly describes that the tubular structures (ribs) and the webbed areas (valleys between ribs) are disposed in an alternating manner across the majority of the article.

F. Munsing Anticipates Claim 7

114. Claim 7 depends from claim 1 and recites “wherein the plurality of webbed areas include one of a front jersey knit pattern and a reverse jersey knit pattern.”

115. Munsing discloses the limitations of claim 7. Munsing refers to its fabric as a “double-ribbed jersey fabric.” Ex.1006, 1:39-44. In particular, Munsing provides the “fabric that I produce to fulfill these requirements and to which this application is confined I have termed a ‘double-ribbed jersey fabric,’ as contradistinguished to other double-ribbed fabrics.” *Id.* Figures 1-6 from Munsing illustrate that the webbed areas of Munsing’s knitted fabric include a front jersey knit pattern. Therefore, Munsing discloses claim 7.

G. Munsing Anticipates Claim 17

116. Claim 17 depends from claim 1 and recites “wherein the article includes a knitted component, the knitted component comprising the plurality of webbed areas and the plurality of tubular structures.”

117. Munsing discloses the limitations of claim 17. Munsing’s article comprises a knitted component. Ex.1006, 1:1-44, Figs. 1-6. Munsing discloses that its “invention relates, particularly, to improvements in knit fabrics that are designed especially for use in the manufacture of underwear.” *Id.*, 1:7-10. Munsing’s knitted

component comprises webbed areas and tubular structures as I discussed for limitations 1[a] and 1[b] in this ground. *See also id.*, 1:7-10, 1:45-98

H. Munsing Anticipates Claim 18

118. Claim 18 depends from claim 17 and recites “wherein the knitted component is formed of unitary knit construction.” In the district court case, the parties have agreed that “unitary knit construction” means “formed as a one-piece element through a knitting process.” Ex.1014, 11.

119. Munsing discloses the limitations of claim 18. Munsing’s fabric is “formed of a combination of wool or other heavy inexpensive material and silk or other fine or superior material, the two materials being so knit together.” Ex.1006, 1:28-35. According to Munsing, “[a]n under-garment formed of this fabric will therefore combine the desirable qualities of both woolen and silk garments without the undesirable features of either.” *Id.*, 2:22-25. In particular, “the silk or superior thread appears on or forms the tops of the ribs on both sides of the fabric throughout the entire fabric.” *Id.*, 2:66-81. Therefore, Munsing’s knitted component is formed of unitary knit construction.

I. Munsing Anticipates Claim 20

120. The limitations of claim 20 are all included in claim 1. I address all of the limitations of claim 1 above. For ease of reference, I provide the following table that indicates which limitations of claim 1 correspond to each limitation of claim 20.

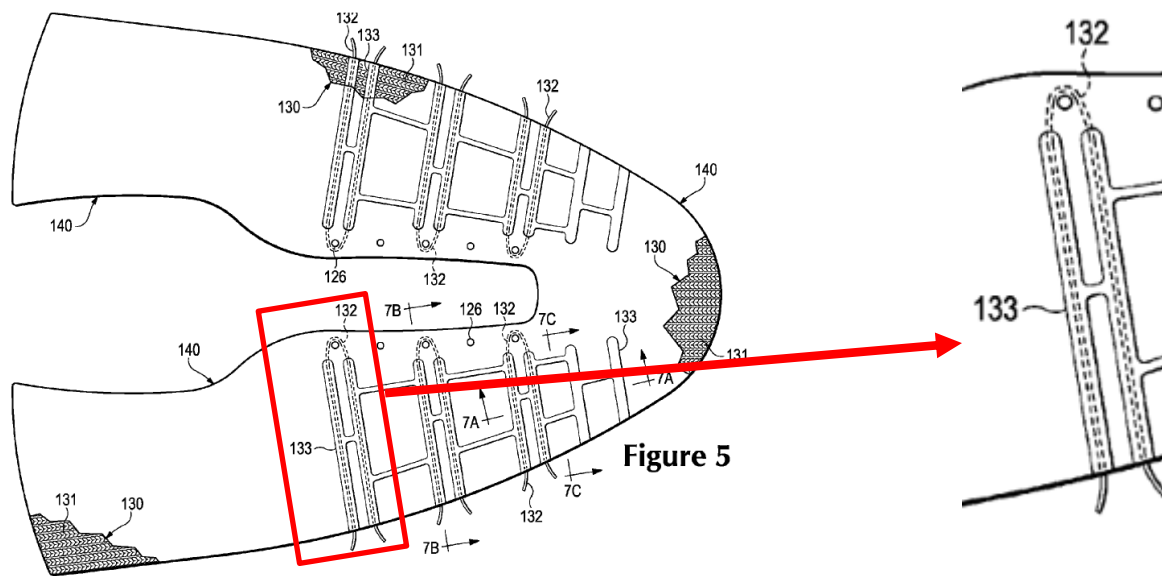
Good discloses an article having all limitations of claim 20 for the reasons I detailed for claim 1 in this ground.

Claim 20	Claim 1
20. An article comprising:	Preamble
a plurality of webbed areas having a front surface,	1[a] and 1[a][i]
the webbed areas configured to move between a neutral position and an extended position, the webbed areas being biased to move toward the neutral position, and	1[a][ii]
a plurality of tubular structures that are adjacent to the webbed areas, the tubular structures;	1[b]
wherein at least one of the webbed areas or tubular structures is configured to stretch to move the webbed areas to the extended position in response to a force applied to the article	1[c]
wherein in the neutral position, a first area of the front surface is hidden from visual observation from a first viewing perspective, and	1[d]
wherein in the extended position, the first area of the front surface is revealed for visual observation from the first viewing perspective.	1[e]

X. GROUND 3: MINAMI RENDERS CLAIMS 8, 9, 14, 15, AND 19 UNPATENTABLE

A. Summary of Minami (Ex.1007)

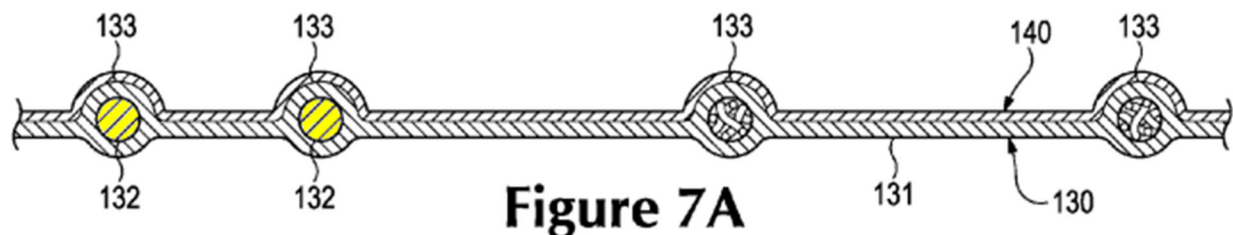
121. I understand that Minami was neither considered nor cited during prosecution of the '046 patent. Ex.1001. Minami discloses an article of footwear that includes an upper. Ex.1007, Abstract. Minami's upper is formed from a knitted component 130, which includes a knit element 131. *Id.*, [0042], [0048]; *see also id.*, [0054]. The knitted component 130 with the knit element 131 is depicted below in Figure 5.



Id., Fig. 5 (annotated). Minami provides that the knit element 131 has physical properties, including its stretch, that vary depending on the types of stitches and yarns used in construction of the knit element 131. *Id.*, [0049]. The knit element 131 has

“a plurality of protruding areas 133 that extend outward and away from the void within upper 120” and “may impart additional thickness or loft to upper 120, while also varying the stretch properties of upper 120.” *Id.*, [0061], [0054]. Minami states that both the size and positioning of the protruding areas 133 can impact an upper’s aesthetic. *Id.*, [0061], [0067]-[0068]. Minami also provides that the “protruding areas 133 may enhance the strength of upper 120 or impart a variety of different properties to upper 120.” *Id.*, [0061]. The ’046 patent similarly discloses that its rib structures “provide strength and/or support to [the] knitted component.” Ex.1001, 4:55-58.

122. A cross-section of Minami’s upper is depicted below in Figure 7A.



Ex.1007, Fig. 7A (annotated). As can be seen from this figure, the “knit element 131 forms two separate and spaced textile layers, which effectively define a channel or tubular structure, and inlaid strand 132 [yellow] is located between the spaced textile layers.” *Id.*, [0051].

123. “Knit element 131 is formed from at least **one yarn** that is manipulated (e.g., with a knitting machine) to form a plurality of intermeshed loops that define a

variety of courses and wales. That is, knit element 131 has the structure of a knit textile. Inlaid strand 132 extends through knit element 131 and passes between the various loops within knit element 131.” *Id.*, [0048] (emphasis added).

124. A POSA would have known that Minami’s knit element 131 can be produced on a weft knitting machine because the knit element 131 is formed by at least one yarn.

B. Minami Anticipates Claim 8

125. Minami’s upper includes webbed areas and tubular rib structures as I explain in detail below. The tubular rib structures are formed of curved portions which have a greater curve length on the upper’s front side than the upper’s back side. Minami’s upper also stretches between a neutral position and an extended position. Therefore, Minami discloses all limitations of claim 8.

1. Preamble of Claim 8

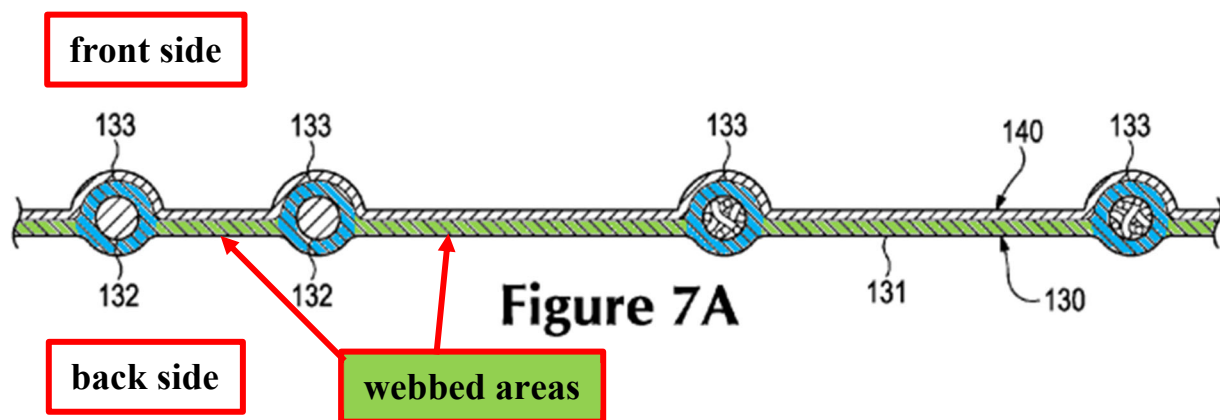
126. The preamble of claim 8 recites “[a]n upper.” Minami discloses this preamble. In particular, Minami discloses an article of footwear that has an upper which includes a knitted component. Ex.1007, Abstract.

2. Limitation 8[a]: “a plurality of webbed areas and a plurality of tubular rib structures”

127. Minami discloses limitation 8[a]. Figure 7A below from Minami depicts a cross-sectional view of a knitted component 130. Ex.1007, [0048], [0051].

3. Limitation 8[b]: “the plurality of webbed areas having a front side and a back side”

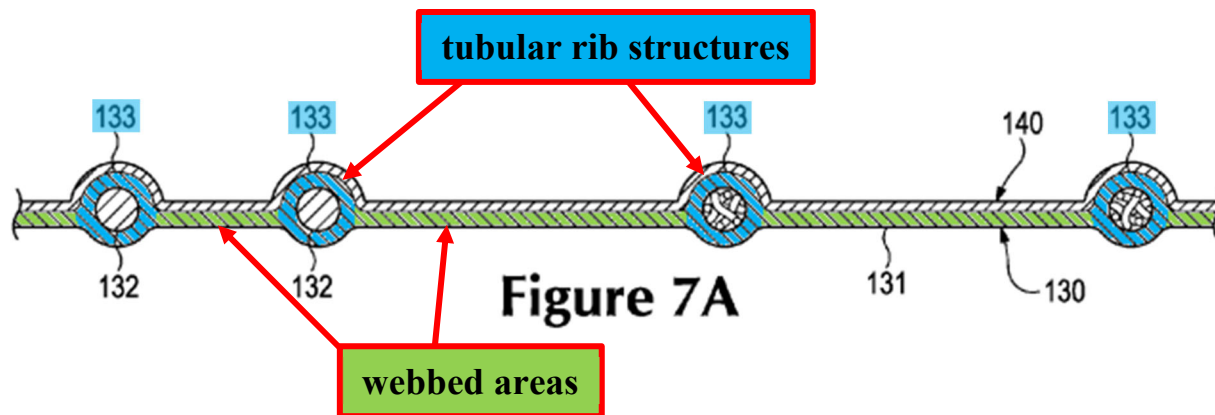
129. Minami discloses limitation 8[b]. Figure 7A below from Minami depicts a cross-section of the knit element 131 and illustrates that the webbed areas (green) have a front side (such as when viewed from the top of the figure) and a back side (such as when viewed from the bottom of the figure).



Ex.1007, Fig. 7A (annotated).

4. Limitation 8[c]: “the tubular rib structures being disposed adjacent to the webbed areas”

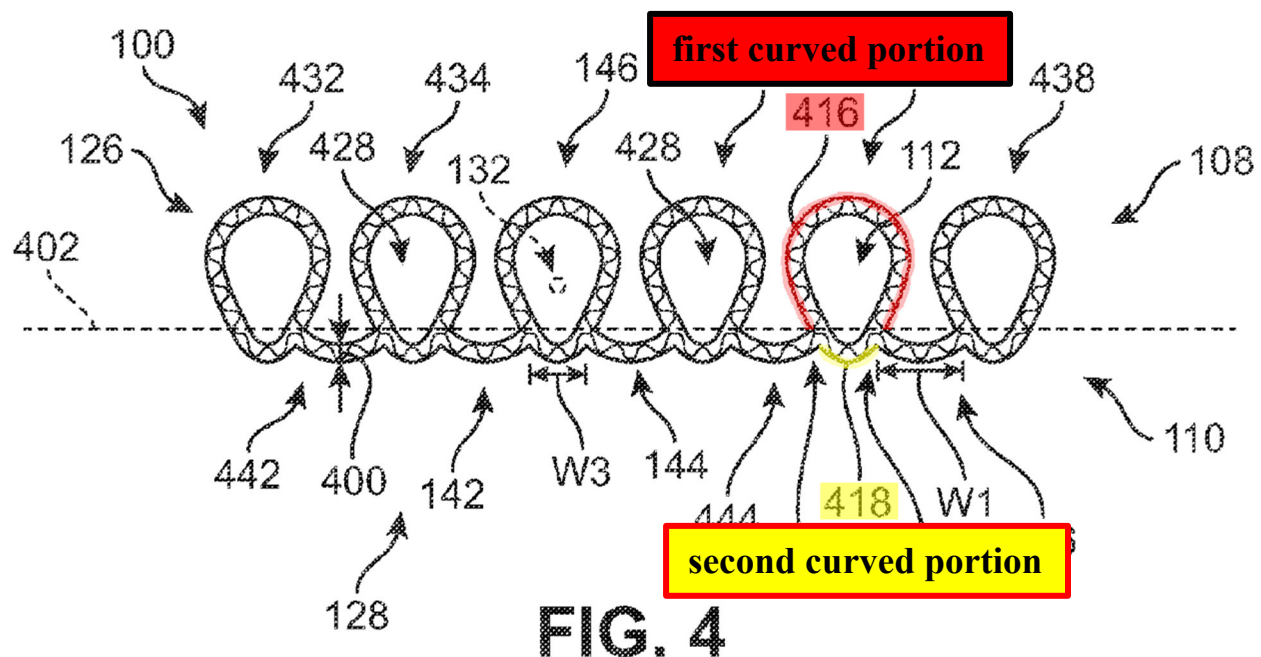
130. Minami discloses limitation 8[c]. Figure 7A below from Minami depicts the knit element 131 and that the tubular rib structures (blue) are disposed adjacent to the webbed areas (green).



Ex.1007, Fig. 7A (annotated).

5. **Limitation 8[d]: “the tubular rib structures having a first curved portion with a first curve length extending from the front side of the webbed areas, and a second curved portion with a second curve length extending from the back side of the webbed areas, the first curve length being greater than the second curve length”**

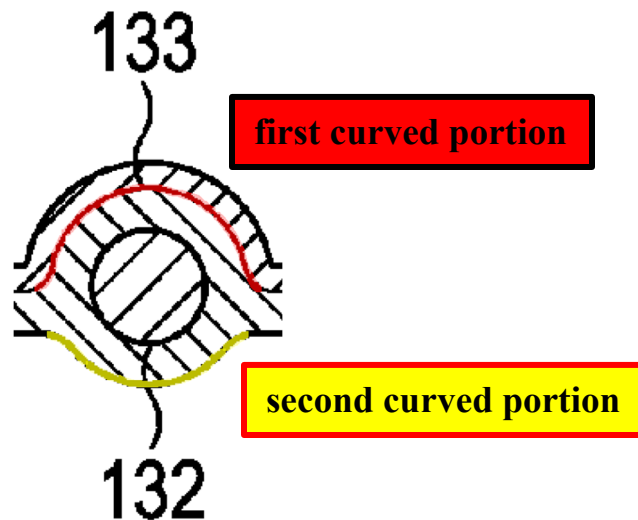
131. Limitation 8[d] is depicted in Figure 4 of the '046 patent and described in the '046 patent's corresponding disclosure. That Figure 4 is shown below with annotations.



Ex.1001, Fig. 4 (annotated). As can be seen, the “tubular rib structures 126 can include a first curved portion 416 [red] and a second curved portion 418 [yellow]. In an exemplary embodiment, first curved portion 416 is disposed opposite of second curved portion 418 on the respective top and bottom of tubular rib structures 126.... [F]irst curved portion 416 and second curved portion 418 meet along a first transition 420 edge and also along a second transition 422 edge, forming a tunnel or tube shape.” *Id.*, 10:20-32. Figure 4 depicts that the first curved portion 416 has a greater curve length than the second curved portion 418.

132. Minami discloses limitation 8[d]. Like the '046 patent, Minami's tubular rib structures have curved portions that extend from the front side and the back side of webbed areas and also have different curve lengths. I show below a

magnified annotated excerpt of Minami's Figure 7A, which depicts a close-up of one representative tubular rib structure.



Excerpt of Minami's Fig. 7A Showing Tubular Rib Structure (annotated)

As can be seen, the representative tubular rib structure has two curved portions and includes a first curved portion extending from the front side of adjacent webbed areas and a second curved portion extending from the back side of adjacent webbed areas. Ex.1007, [0061]. The first curved portion's curve length is greater than the second curved portion's curve length as evidenced by the first curved portion protruding farther and extending a greater distance between the adjacent webbed areas than the second curved portion.

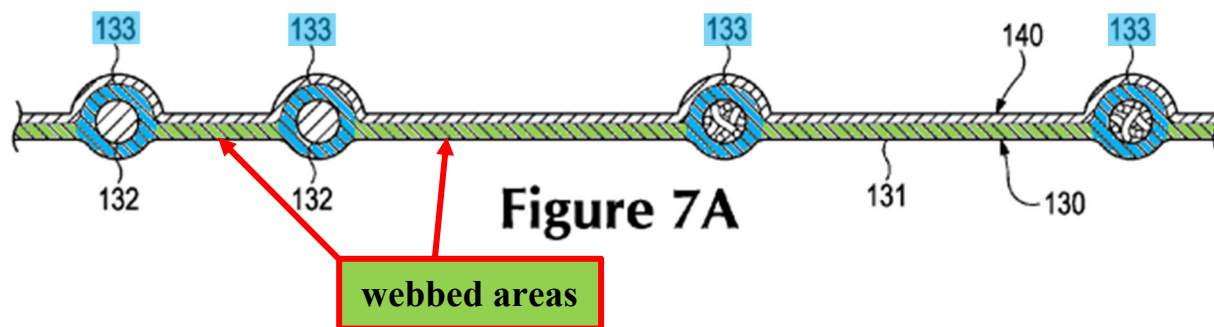
133. Therefore, Minami's tubular rib structures have a first curved portion with a first curve length extending from the front side of the webbed areas, and a second curved portion with a second curve length extending from the back side of

the webbed areas, wherein the first curve length is greater than the second curve length.

6. Limitation 8[e]: “the webbed areas configured to move between a neutral position and an extended position, the webbed areas being biased to move toward the neutral position”

134. Minami discloses limitation 8[e]. Minami’s knit element 131 stretches and can include different types of yarn that allow for stretching. Ex.1007, [0048]-[0049], [0052], Claim 1. Minami’s knit element 131 stretches as a result of its loop structure and the physical properties of the yarn (such as the elasticity or twist in yarn) that forms the knit element 131. Minami provides that: “Depending upon the types and combinations of stitches utilized, areas of knit element 131 may have a plain knit structure, a mesh knit structure, or a rib knit structure, for example. The different types of stitches may affect the physical properties of knit element 131, including aesthetics [and] stretch ... of knit element 131.” *Id.*, [0049]. Minami also explains that knit element 131, which includes the connecting portions corresponding to the ’046 patent’s webbed areas, has varying stretch properties that depend on the type of yarn used and discloses that “[t]he different types of yarns may affect the physical properties of knit element 131, including aesthetics [and] stretch ... of knit element 131.” *Id.*

135. Figure 7A below from Minami depicts the knit element 131 when the webbed areas (green) are in an unstretched, neutral position.



Id., Fig. 7A (annotated). The webbed areas stay in this neutral position as long as a force is not applied to stretch Minami’s knit element 131.

136. If a force is applied so that the knit element 131 stretches, Minami’s webbed areas are stretched to an extended position. If the force is released, the webbed areas transition to the neutral position. Accordingly, Minami’s webbed areas of the knit element 131 are biased toward the neutral and unstretched position.

137. Therefore, Minami discloses its webbed areas are configured to move between a neutral position and an extended position and biased to move toward the neutral and unstretched position.

7. Limitation 8[f]: “at least one of the webbed areas and the tubular rib structures configured to stretch from the neutral position to the extended position in response to a force applied to the upper”

138. Minami discloses limitation 8[f]. As I explained for limitation 8[e], Minami’s webbed areas are configured to move between a neutral position and an extended position and biased to move toward the neutral and unstretched position. Stretching of the knit element 131 causes this movement of the knit element 131. Therefore, Minami discloses that at least one of its webbed areas or tubular rib

structures is configured to stretch from the neutral and unstretched position to the extended position responsive to a force applied to the upper.

C. Minami Anticipates and Renders Obvious Claim 9

139. Claim 9 depends from claim 8 and recites:

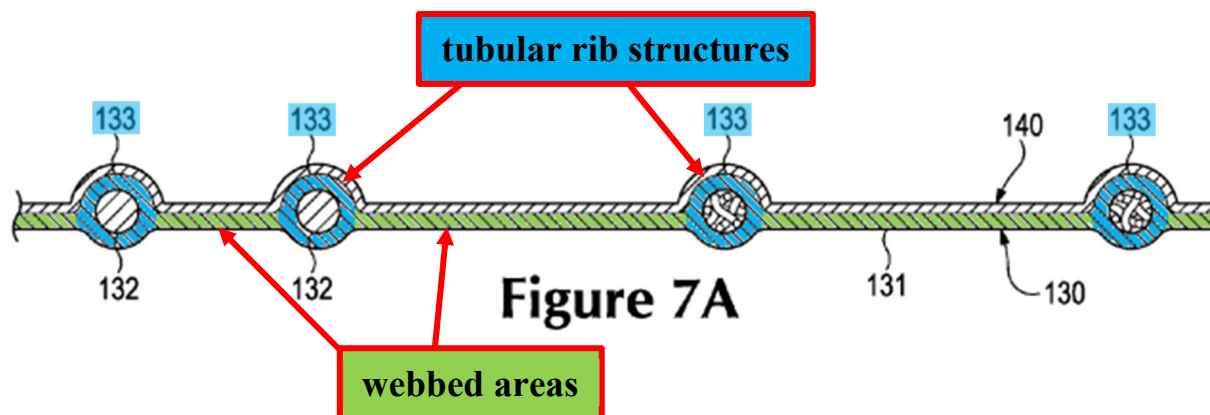
wherein the webbed areas include a plurality of courses formed from a first yarn,

wherein the tubular rib structures include a plurality of courses formed from a second yarn,

wherein the first yarn and the second yarn are different; and

wherein at least one course of one of the plurality of webbed areas formed with the first yarn is connected with at least one course of one of the plurality of tubular rib structures formed with the second yarn.

140. Minami discloses these limitations of claim 9. Minami's knit element 131 includes the webbed areas and tubular rib structures and "is formed from at least one yarn that is manipulated (e.g., with a knitting machine) to form a plurality of intermeshed loops that define a variety of courses [i.e., rows of loops] and wales." Ex.1007, [0048]; Ex.1011, 3 ("rows of loops or stitches running across the width of a knitted fabric"). According to Minami, its knit element 131 additionally is formed of a "unitary knit construction." Ex.1007, [0047]-[0048]. The knit element 131 may be formed with a V-bed flat weft knitting machine as I previously explained. As shown in Minami's Figure 7A, at least one course of the webbed areas (green) is connected to at least one course of the tubular rib structures (blue).



Ex.1007, Fig. 7A (annotated).

141. Minami discloses that “[w]ith regard to yarns, knit element 131 may have one type of yarn in one area of knit element 131 and another type of yarn in another area of knit element 131.” *Id.*, [0049]; *see also id.*, [0067]-[0068]. Additionally, Minami discloses that “[t]he different types of yarns may affect the physical properties of knit element 131, including aesthetics, stretch, thickness, air permeability, and abrasion-resistance of knit element 131.” *Id.*, [0049]. “Depending upon various design criteria, knit element 131 may incorporate yarns with different deniers, materials (e.g., cotton, elastane, polyester, rayon, wool, and nylon), and degrees of twist, for example.” *Id.* Moreover, Minami explains “the different types of yarns may impart different properties to different areas of knitted component 130.” *Id.* Therefore, Minami discloses claim 9.

142. It also would have been obvious to a POSA in view of Minami to use one yarn for the webbed areas and a different yarn for the tubular rib structures. It would have been obvious for multiple reasons.

143. First, Minami provides that its upper can be used in a soccer shoe. *Id.*, [0062]. When the upper is used in a soccer shoe, the protruding areas 133 of the upper desirably provide enhanced ball control as a result of contact between the upper's protruding areas 133 and a soccer ball. *Id.*, [0062]. It would have been understood by a POSA that ball contact between the protruding areas 133 and the soccer ball would cause significant wear to the protruding areas 133 over time. This would particularly be the case in implementations where Minami's skin layer 140 is excluded from the soccer shoe. *Id.*, [0054]. Minami additionally provides that an upper's materials may be selected based upon wear-resistance. *Id.*, [0004]. It would have been known for a POSA to construct Minami's webbed areas to have different wear-resistance than Minami's tubular rib structures (such as to provide the tubular rib structures with a greater wear-resistance than the webbed areas) and to use different yarns (such as one yarn with a greater wear resistance than the other) to achieve that goal. *Id.*, [0049].

144. Second, Minami provides that the inlaid strand 132 within Minami's protruding areas 133 provides support, stability, and structure. According to Minami, the inlaid strand 132 "assists with securing upper 120 around the foot, limits deformation in areas of upper 120 (e.g., imparts stretch-resistance), and operates in connection with lace 125 to enhance the fit of footwear 100." *Id.*, [0048]. It would have been known to a POSA that choosing a yarn for the protruding areas 133 that

additionally provides support, stability, and structure would desirably enhance those benefits or provide those benefits where no inlaid strand 132 is included within the protruding areas 133. *Id.*, [0063]-[0065]. In view of Minami's disclosure, a POSA would have known and desired to select from different types of yarn to control the stretch, thickness, and abrasion-resistance of knit element 131. *Id.*, [0049]. For example, a POSA would have desired to construct the tubular rib structures from a different yarn with a more limited stretch, greater thickness, or greater abrasion-resistance than a yarn used for the webbed areas to achieve an upper with enhanced performance characteristics for an activity like kicking a soccer ball.

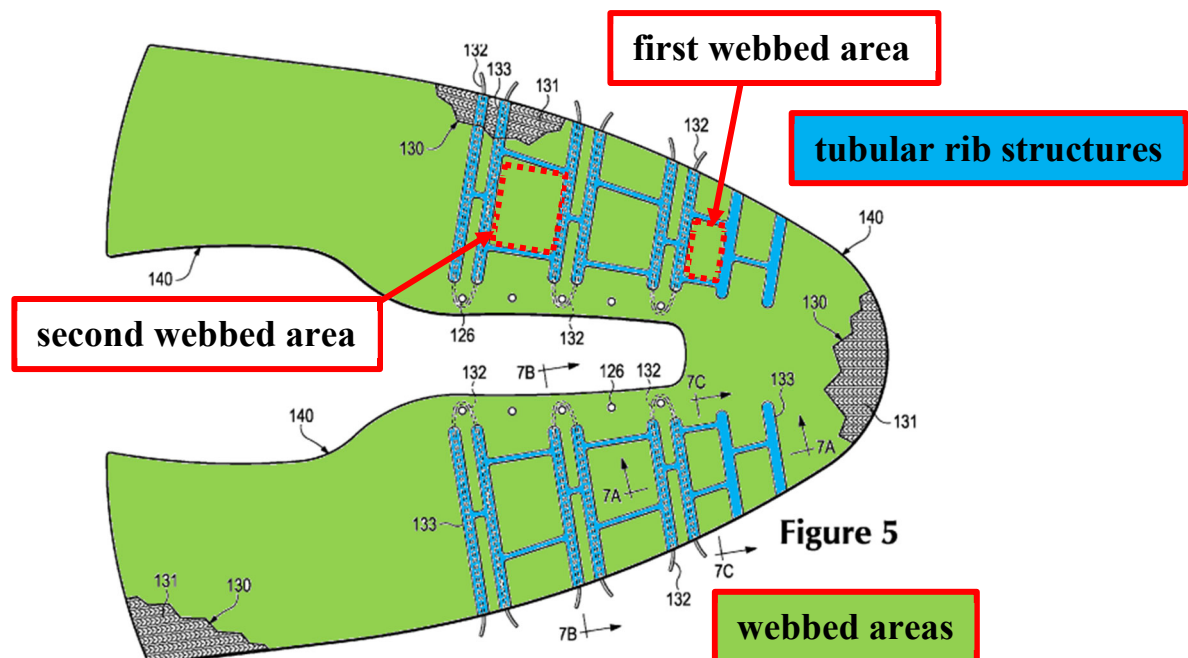
145. Third, Minami provides that the protruding areas 133 vary the stretch properties and aesthetics of Minami's upper. *Id.*, [0054], [0061]. Minami also discloses that different yarns were known to impart different stretch properties and aesthetics. *Id.*, [0049]. It would have been obvious and desirable to a POSA in view of Minami's disclosure to construct Minami's webbed areas to have different aesthetics or stretch than the tubular rib structures, and the POSA would have used different yarns for the webbed areas than the tubular rib structures to achieve that goal.

146. Therefore, the limitations of claim 9 would have been obvious in view of Minami.

D. Minami Anticipates Claim 14

147. Claim 14 depends from claim 8 and recites “wherein the plurality of webbed areas comprises a first webbed area and a second webbed area; wherein the first webbed area has a first width, and the second webbed area has a second width, the first width being less than the second width.”

148. Minami discloses the limitations of claim 14. Figure 5 below from Minami depicts the webbed areas (green) with first and second webbed areas.

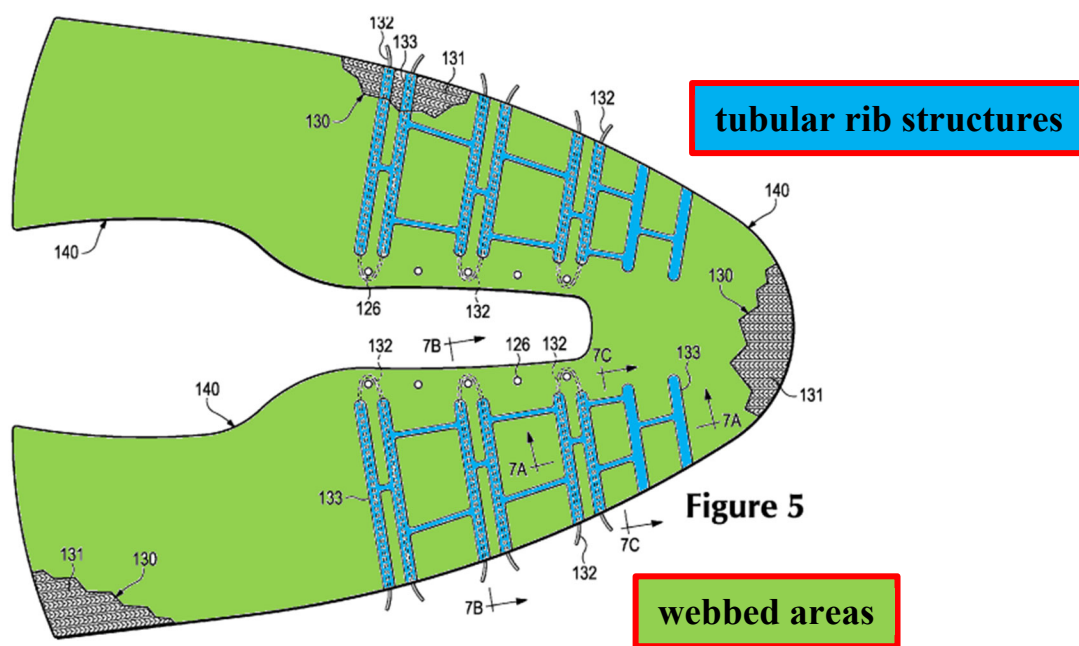


Ex.1007, Fig. 5 (annotated). As can be seen from this figure, the first webbed area has a first width that is less than a second width of the second area. *See also id.*, [0068] (“specific pattern that protruding areas 133 form in upper 120 may vary significantly”).

E. Minami Anticipates and Renders Obvious Claim 15

149. Claim 15 depends from claim 8 and recites “wherein the plurality of webbed areas and the plurality of tubular rib structures are disposed in an alternating manner across the majority of the upper.”

150. Minami discloses the limitations of claim 15. Figure 5 below from Minami depicts that the webbed areas (green) and the tubular rib structures (blue) are disposed in an alternating manner across the majority of the upper.



Ex.1007, Fig. 5 (annotated).

151. A POSA would also have found it obvious to construct Minami’s upper with even more than the majority of Minami’s upper being covered by the alternating webbed areas and tubular rib structures. Minami’s protruding areas 133 vary the stretch properties and aesthetics of Minami’s upper, as well as to provide enhanced

soccer ball control when incorporated in a soccer shoe. *Id.*, [0054], [0061]-[0062]. According to Minami, “[t]he locations and configurations of protruding areas 133 may ... vary significantly.” *Id.*, [0068]. It would have been obvious and desirable to a POSA to construct an upper with even more than the majority of the upper being covered by alternating webbed areas and tubular rib structures because this would advantageously control the upper’s aesthetic, enhance the upper’s support and strength, and/or increase the portion of the upper which provides better soccer ball control as I explain for claim 9.

F. Minami Anticipates Claim 19

152. Claim 19 depends from claim 8 and recites “wherein the upper includes a knitted component, the knitted component comprising the plurality of webbed areas and the plurality of tubular rib structures.”

153. Minami discloses the limitations of claim 19 for the reasons I explained for the preamble of claim 8 and limitation 8[a].

XI. SECONDARY CONSIDERATIONS

154. I am not aware of any secondary considerations of non-obviousness that would support non-obviousness of the ’046 patent. I am not aware of any products sold by Patent Owner in the United States that would be covered by the ’046 patent.

155. Given that the articles or uppers claimed in the ’046 patent are not new or nonobvious, and were invented long before September 2014, I am not aware of

any long-felt need in the industry, unexpected results, skepticism of the invention, or teaching away from the invention. I am also not aware of any praise for the alleged inventions or copying of the alleged inventions by other companies. If Patent Owner identifies any alleged evidence of secondary considerations in the future, I reserve the right to respond to that information.

XII. CONCLUSION

156. For the foregoing reasons, it is my opinion that claims 1–3, 7–9, and 14–20 of the '046 patent would have been obvious to a POSA at the relevant time in view of the prior art referenced above.

157. I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: 11/08/2023

By:


Dr. David S. Brookstein