

Petitioner lululemon's Demonstratives For Oral Argument

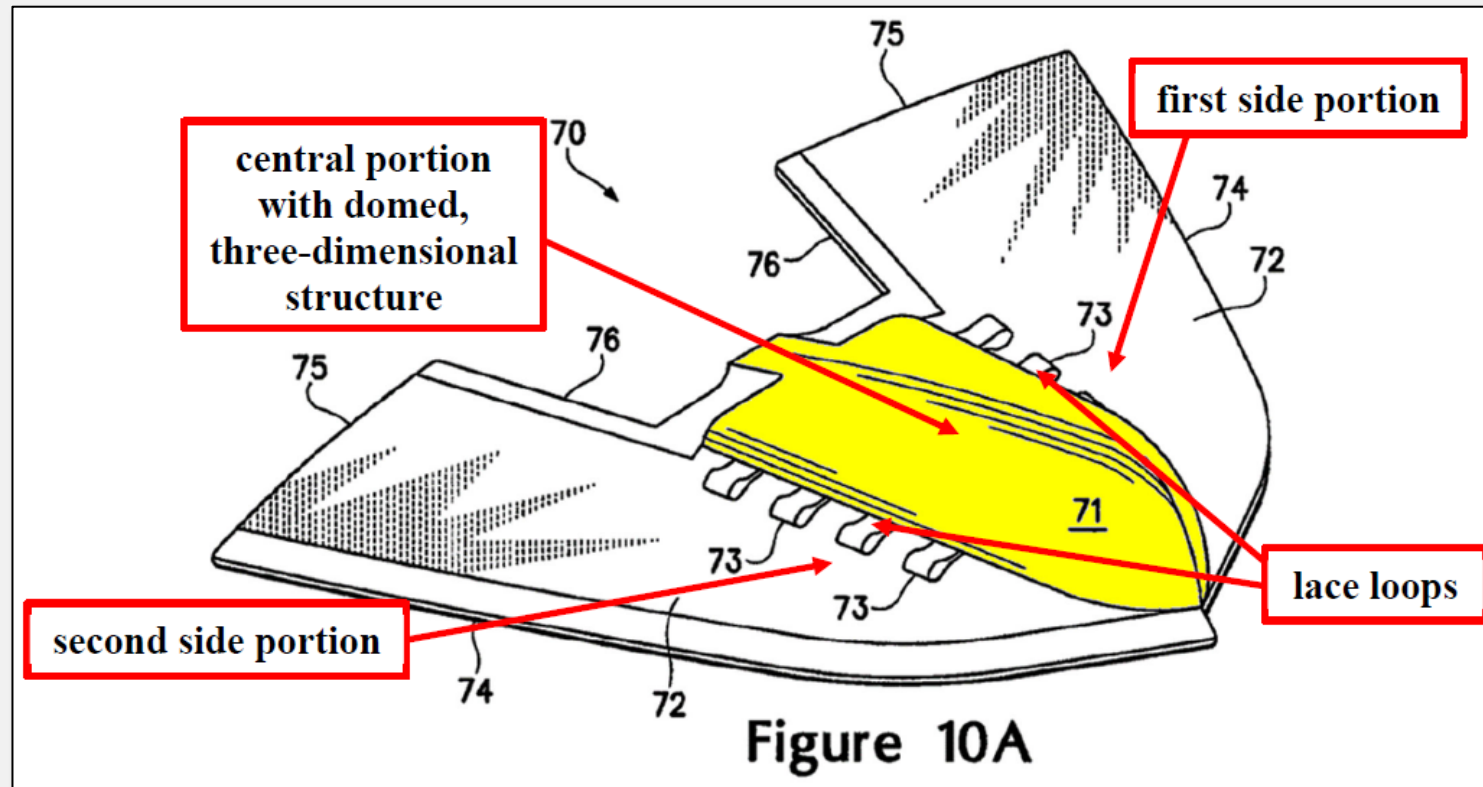
December 16, 2024

lululemon usa inc. v. Nike, Inc.

IPR2023-01460 (Patent 9,730,484)

**lululemon Ex. 1023
lululemon v. Nike
IPR2023-01460**

The '484 Patent



(Ex. 1001, Fig. 10A (annotated))

Claim 1 Of The '484 Patent

1. An article of footwear comprising an upper including a flat-knitted element formed from at least one yarn mechanically manipulated in a flat-knitting process, the flat-knitted element including a first layer having:

- a central portion having a domed, three-dimensional structure configured for extending over the top of a foot;
- a first side portion being formed of unitary construction with the central portion and extending from a first side of the central portion; and
- a second side portion being formed of unitary construction with the central portion and extending from a second side opposite the first side of the central portion, the domed, three-dimensional structure shaped to extend above the plane of the first side portion and the second side portion when the flat-knitted element is in a flattened configuration.

(Ex. 1001, Claim 1)

Ground 3

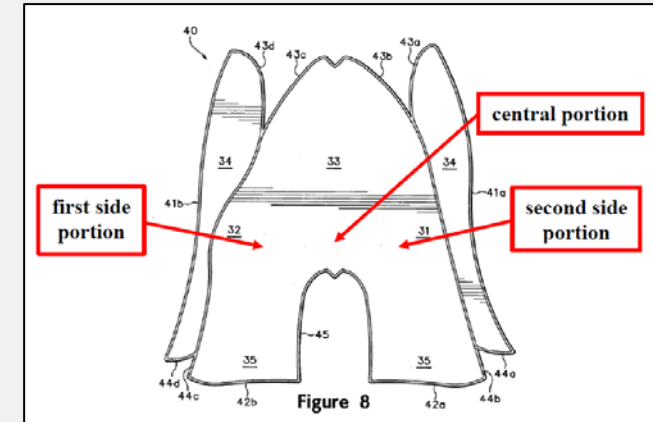
Motivation To Combine Is Undisputed

Reasons to Combine:

- ⌚ Simplifies the assembly of upper
- ⌚ Reduces cutting
- ⌚ Reduces waste
- ⌚ Facilitates manufacturing different shoe styles

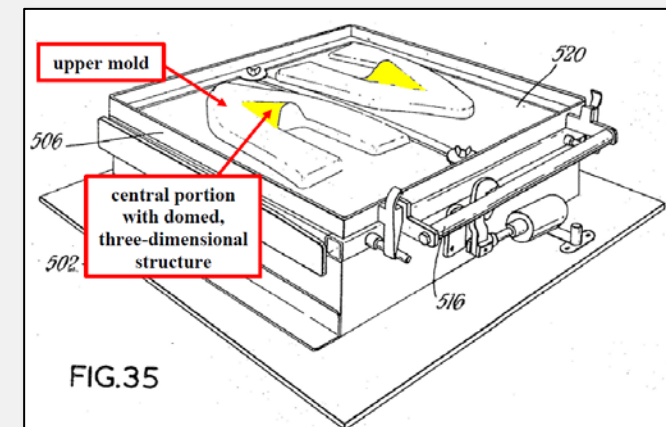
(Ex. 1002, ¶¶92-94)

Dua



(Ex. 1004, Fig. 8 (annotated); Ex. 1002, ¶107)

Lockwood



(Ex. 1003, Fig. 35 (annotated); Ex. 1002, ¶103)

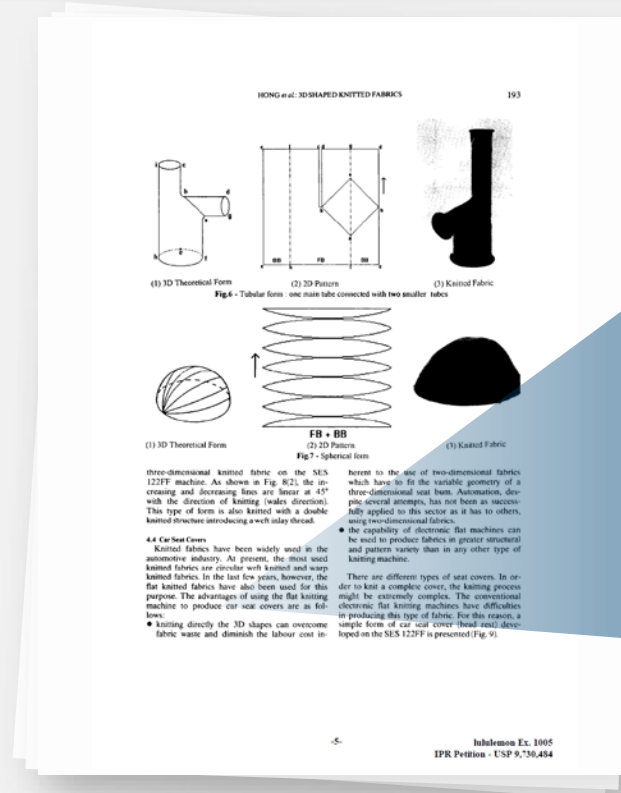
Ground 3

Hong Discloses 3D Structures Formed During Flat Knitting

Hong Discloses 3D Knitted Fabrics

The development of 3D shaped knitted fabrics for technical purposes on a flat knitting machine

H Hong, A A Filho, R Figueiro & M D de Araújo
Department of Textile Engineering, Minho University, 4800 Guimarães, Portugal



- **knitting directly the 3D shapes** can overcome fabric waste and diminish the labour cost inherent to the use of two-dimensional fabrics which have to fit the variable geometry of a three-dimensional seat bum. Automation, despite several attempts, has not been as successfully applied to this sector as it has to others, using two-dimensional fabrics.

(Ex. 1005, 1, 5)

European Examiner Objected To 3D Domes As Not Enabled

European Examiner's "enablement" objection:

3. The application does not meet the requirements of Article 83 and 84 EPC, because claim 1 is not clear to such an extent that it cannot be carried out by the skilled person..

The subject-matter of claim 1 discloses an upper comprising a central portion, wherein the central portion has "a domed shape formed through the flat knitting process such that the central portion has a three-dimensional structure"; the present subject-matter is only disclosed (see above point 2.) at para. 54 and 55 of the description, wherein nothing is described nor disclosed nor explained on how a domed three-dimensional knitted element could be manufactured through a flat-knitting process. It is clear to any skilled person that the present subject-matter lacks essential information on how such an effect (domed portion) could be achieved.

(Ex. 1017, 15)

Nike Argued Hong Demonstrates POSA's Knowledge Of 3D Knitting

Nike's response to European Examiner:

Insufficient support to be reworked (Art. 83 EPC)

In view of the objection raised in item 3 that the person skilled in the art is allegedly not provided with sufficient information to rework the subject matter of pending claim 1 in view of the three-dimensional knit structure, we also respectfully disagree.

There are numerous prior art documents which disclose that achieving three-dimensional knitted textiles may generally be obtained through flat knitting, such as e.g. "The development of 3D shaped knitted fabrics for technical purposes on a flat knitting machine", Hong et al., IJFTR 19(3), Vol. 19, Sept. 1994, pp. 189-194. Hence, the objection appears to be unfounded.

(Ex. 1017, 8)

'484 Patent Lacks Disclosure Of How To Knit 3D Structures

US 9,730,484 B2

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Assembly Process

A suitable assembly process for footwear 10 is generally depicted in FIGS. 8A-8E. The order of the various steps outlined below is discussed as an example of the manner in which footwear 10 may be assembled. One skilled in the relevant art will recognize, however, that a different order may also be utilized for assembling footwear 10. With reference to FIG. 8A, each of textile elements 40 and 50 are depicted as being attached or otherwise joined to central textile element 60. More particularly, lower edge 42 of lateral textile element 40 is stitched to lateral edge 65a of center portion 62, and lower edge 52 of medial textile element 50 is stitched to medial edge 65b of center portion 62. A variety of stitch types may be utilized to join edges 42, 52, 65a, and 65b in the manner discussed above. For example, edges 42, 52, 65a, and 65b may abut each other or overlap each other once the stitching is applied. In addition to stitching, edges 42, 52, 65a, and 65b may be joined to each other with an adhesive or with a heat bonding operation. Accordingly, a variety of methods may be utilized to join textile elements 40, 50, and 60. Furthermore, one skilled in the relevant art will recognize that a joint having the general shape of the foot may be utilized in joining textile elements 40, 50, and 60 to form upper 30.

Once lower portions of textile elements 40 and 50 are joined to center portion 62, textile elements 40 and 50 are joined to rearward portion 63, as depicted in FIG. 8B. More particularly, rear edge 43 of lateral textile element 40 is stitched to lateral edge 66a of rearward portion 63, and rear edge 53 of medial textile element 50 is stitched to medial edge 66b of rearward portion 63. With reference to FIG. 8C, the assembly process continues by joining textile elements 40 and 50 to forward portion 61. More particularly, upper edge 41 of lateral textile element 40 is stitched to lateral edge 64a of forward portion 61, and upper edge 51 of medial textile element 50 is stitched to medial edge 64b of forward portion 61.

At this point in the assembly process, textile elements 40, 50, and 60 are joined to each other to form an interior void shaped to receive the foot. The various other elements of footwear 10 may now be added. With reference to FIG. 8D, lace elements 33 are positioned to extend through channels 44 and 54 and also extend under center portion 62 of central textile element 60. Each of loops 35 are positioned to extend outward from upper portions of channels 44 and 54, and central section 36 of lace elements 33 is positioned under and on the exterior of central textile element 60. As the final steps in this example assembly process, as depicted in FIG. 8E, lace 32 is threaded through lace elements 33, heel counter 34 is adhesively-bonded or otherwise secured to an exterior of upper 30 in heel region 13, and sole structure 20 is adhesively-bonded or otherwise secured to a lower area of upper 30.

Additional Configurations

Footwear 10 provides an example of a suitable configuration of an article of footwear having an upper at least partially formed from a flat knit material structure. With reference to FIG. 8A, another configuration for lateral textile element 40 is depicted as having various lace loops 45 in place of channels 44 and lace elements 33. As discussed above, the flat knitting process may be utilized to form generally three-dimensional structures wherein layers of material overlap each other (i.e., are at least partially coextensive) to form loops or other overlapping configurations, as with channels 44 and 54. Lace loops 45 may be used in place of lace elements 33 to receive portions of lace 32. Although not necessary, lace elements 33 may be formed

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from a substantially inextensible material. In order to provide lace loops 45 with similar properties, the yarns and stitch selected for lace loops 45 may impart a substantially non-stretch configuration to upper 30 in the area of lace loops 45.

Yet another configuration for lateral textile element 40 is depicted in FIG. 9B as having a pocket 46 in place of channels 44 and lace elements 33. Pocket 46 has an upper opening and is otherwise closed to permit small items (e.g., a key, identification, or change) to be secured within footwear 10. As with channels 44 and lace loops 45, pocket 46 is formed through the flat knitting process as a unitary construction with the textile element 40. If desired, a flap or other closure element may be provided to help secure items within the pocket 46 (optionally, the flap may be formed as part of the textile element 40 in the flat knitting process (e.g., as a unitary, one-piece structure therewith)).

As another example of a three-dimensional structure formed through a flat knitting process, an upper 70 is depicted in FIGS. 10A-10C. Upper 70 includes a central portion 71, a pair of side portions 72, and eight lace loops 73. Side portions 72 each include a side edge 74, a rear edge 75, and a central edge 76. When assembled into an article of footwear, central portion 71 extends over the foot, and side portions 72 wrap under the foot. More particularly, side edges 74 are joined to each other (e.g., with stitching) to form a seam that extends under the foot and along a longitudinal length of the foot. In addition, rear edges 75 are joined to each other (e.g., with stitching) to form a seam that extends upward along the heel. In this configuration, central edge 76 may define an opening that permits the foot to enter and exit a void within upper 70. A lace may also extend through lace loops 73 to provide adjustability.

Whereas side portions 72 are relatively flat in configuration, central portion 71 has a domed shape formed through the flat knitting process. That is, the flat knitting process forms central portion 71 to have a three-dimensional structure that is shaped to extend over the foot. In comparison with side portions 72, which have a non-ribbed type of knit, central portion 71 may be ribbed. In addition to different knit types, different areas may also incorporate different yarns to further vary the properties of upper 70. In addition to providing a three-dimensional structure, therefore, the flat knitting process may be utilized to impart different knit types and yarns to different areas of upper 70, thereby varying the properties of upper 70 in the different areas.

Another article of footwear 10' is depicted in FIGS. 11A and 11B as including a sole structure 20' and an upper 30'. Whereas footwear 10 includes sole structure 20 that is separate from and attached to upper 30, sole structure 20' of this example is a lower surface of a textile material that forms upper 30'. Accordingly, footwear 10' may be used for activities such as yoga where a minimal sole is acceptable. In other configurations, sole structure 20' may include polymer foam or rubber elements that impart force attenuation and wear resistance. A separate sole structure may be provided for use with upper 30', if desired.

Upper 30' includes a foot-receiving portion 31' and a pair of strips 32' that extend outward from sides of foot-receiving portion 31'. Foot-receiving portion 31' has the general configuration of a sock that is formed of unitary (i.e., one piece) construction by the flat knitting process. Foot-receiving portion 31' is, therefore, a textile element shaped to extend around the foot, and foot-receiving portion 31' has an opening 33' for inserting and removing the foot from upper 30'. Strips 32' are each formed of unitary (i.e., one piece) construction with foot-receiving portion 31' and are joined

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Inventor: Lulemon Ex. 1001
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Whereas side portions 72 are relatively flat in configuration, central portion 71 has a domed shape formed through the flat knitting process. That is, the flat knitting process forms central portion 71 to have a three-dimensional structure that is shaped to extend over the foot. In comparison with side portions 72, which have a non-ribbed type of knit, central portion 71 may be ribbed. In addition to different knit types, different areas may also incorporate different yarns to further vary the properties of upper 70. In addition to providing a three-dimensional structure, therefore, the flat knitting process may be utilized to impart different knit types and yarns to different areas of upper 70, thereby varying the properties of upper 70 in the different areas.

(Ex. 1001, 10:34-46)

Nike Cannot Require More Detail Than Its Own Disclosure

- ⌚ Nike cannot demand details from Hong where '484 Patent relies on a POSA's knowledge for such details

“[T]he Board’s observation that appellant did not provide the type of detail in his specification that he now argues is necessary in prior art references supports the Board’s finding that one skilled in the art would have known how to implement the features of the references and would have concluded that the reference disclosures would have been enabling.”

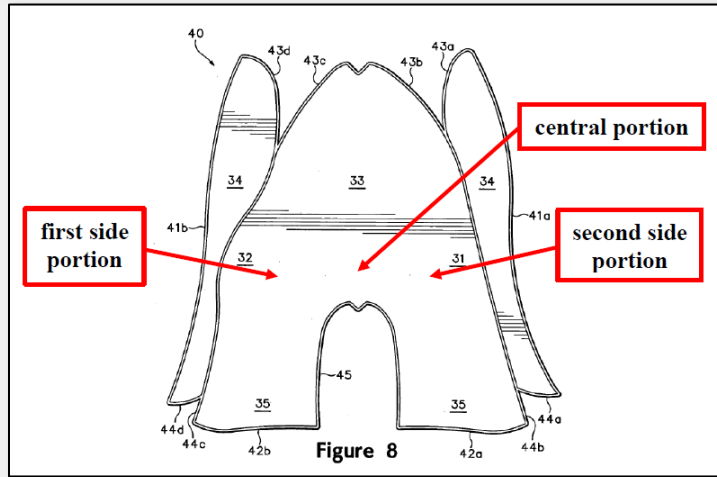
In re Epstein, 32 F.3d 1559, 1568 (Fed. Cir. 1994)

Nike's Enablement Argument Is Misplaced

- ⌚ Nike argues claims cannot be challenged for lack of enablement in this proceeding, citing *Cuozzo*
- ⌚ But Nike fails to explain its statements in European prosecution
- ⌚ Nike fails to address argument that the lack of disclosure in '484 Patent demonstrates what POSA would know

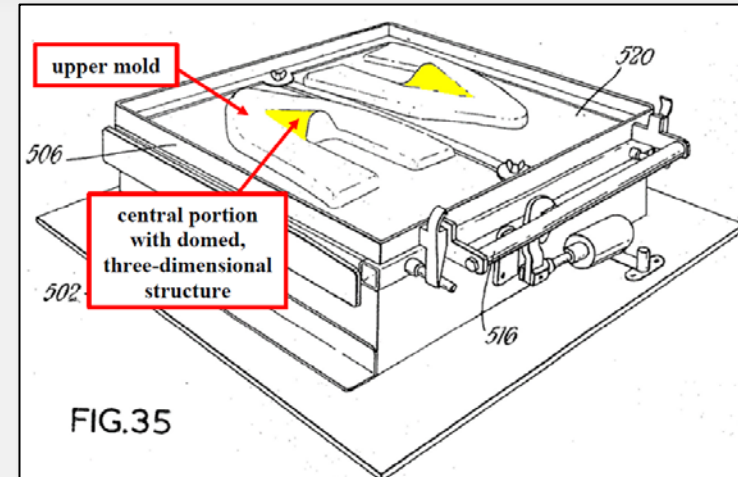
Dua And Lockwood Disclose The Claimed Dome

Dua

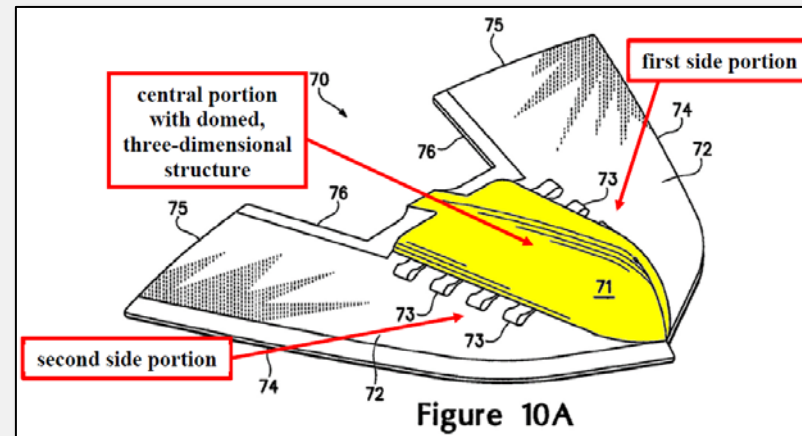


(Ex. 1004, Fig. 8 (annotated); Ex. 1002, ¶107)

Lockwood



(Ex. 1003, Fig. 35 (annotated); Ex. 1002, ¶103)



(Ex. 1001, Fig. 10A (annotated); Ex. 1002, ¶120)

'484 Patent

Hong Discloses Flat Knitting Domed Structures

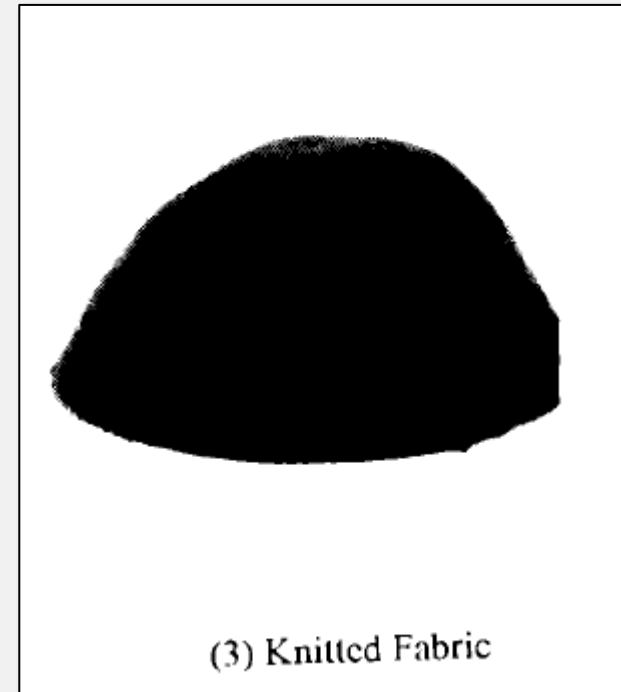
Hong discloses knitted 3D domed structures

4.2 Spherical Forms

It is not difficult to knit a spherical form in the SES 122FF flat knitting machine. To knit a spherical form with a radius R , it is necessary to start by transferring the three-dimensional concept to a two-dimensional pattern, as shown in Fig. 7, and then establishing the relation between the number of operating needles and the number of knitted courses as follows:

$$C = \frac{N \sqrt{1 - \sin^2(\pi n/N)}}{2\alpha M} \quad \dots (2)$$

(Ex. 1005, 4)



(Ex. 1005, 5)

Example of domed structure from Hong's Shima Seiki SES 122FF flat knitting machine

Nike's Expert Validated The Knitting Capabilities Of Hong's Machine

Dr. Pastore agreed Shima Seiki machines could knit 3D structures in the 1990s:

Q. So by November 2006, both Stoll and Shima Seiki had flat knitting machines that were capable of forming flat knit structures that had three-dimensional structures; is that correct?

A. Yes, and as described in the context of the '484 patent.

(Ex. 1022, 26:13-18)

Q. So the Stoll and the Shima Seiki machines that had these capabilities to flat knit three-dimensional structures were available since the 1990s; is that correct?

A. Yes.

(Ex. 1022, 27:11-15)

Nike Pretends Hong Is Titled “Knitting To Shape 2D Fabrics”

Nike argues:

“Hong’s discussion of these methods only reaffirms the true nature of Hong’s claimed invention: methods of knitting precisely-shaped, two-dimensional pattern pieces that can later be formed into three-dimensional structures.”

(POR, 25)

Nike’s argument ignores the entire purpose of Hong and its disclosure of “knitting directly the 3D shapes”

(Ex. 1005, 1, 5)

Hong Repeatedly Describes 3D Flat Knit Structures

Hong states:

- ⦿ “**knitting directly the 3D shapes** can overcome fabric waste and diminish the labour cost inherent to the use of two-dimensional fabrics” (Ex. 1005, 5)
- ⦿ “the use of the new flat knitting machines **to knit 3D structures**” (Ex. 1005, 1)
- ⦿ “[i]t is **not difficult to knit a spherical form** in the SES 122FF flat knitting machine” (Ex. 1005, 4)
- ⦿ “[b]y exploiting the capacity of this machine, it is possible to **knit more types of three-dimensional** knitted fabrics” (Ex. 1005, 6)
- ⦿ “[f]abrics knitted with the same knitted structure but using different loop lengths have different geometrical dimensions” (Ex. 1005, 2)
- ⦿ “[i]f one fabric is knitted with different loop lengths in different courses, shaping can take place” (Ex. 1005, 2)
- ⦿ “[d]uring knitting, the two smaller tubes are separately knitted with two cam systems” (Ex. 1005, 4)

Nike's Expert Confirms "Knit to Shape" Includes 3D Structures

Dr. Pastore's testimony:

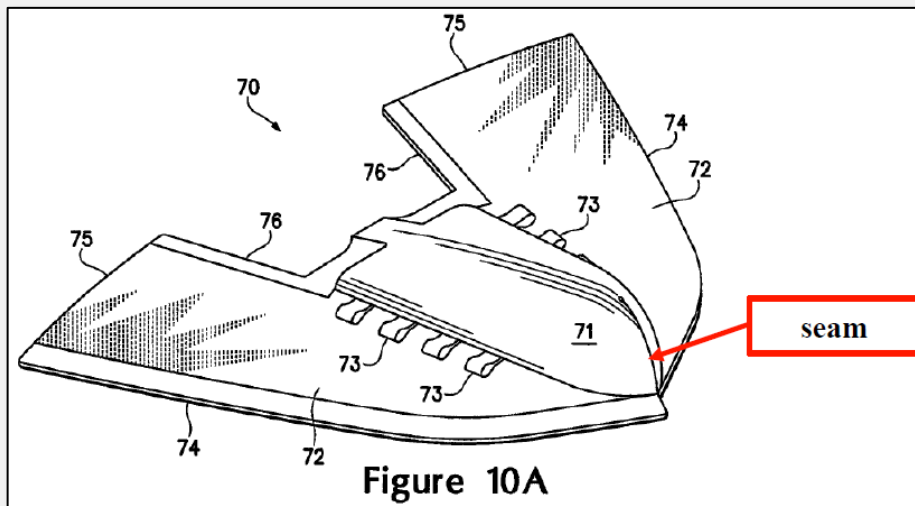
Q. Okay. So there are some knit to shape articles that could include three-dimensional structures; correct?

A. It's within the realm of knit to shape. The broadest definition of it we could include something like this patented object with the domed three-dimensional structure. It could be considered a form of knit to shape.

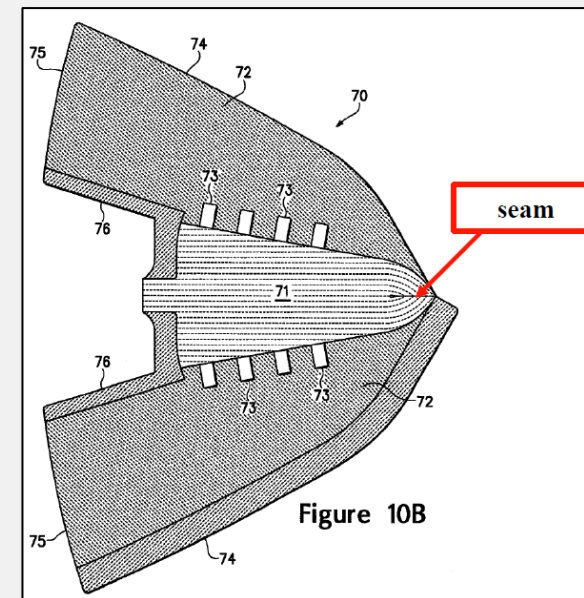
(Ex. 1022, 57:6-13)

Seams Can Be Present In 3D Knitted Structures

- ⌚ Nike argues seams in knit materials imply Hong's process is limited to 2D structures (POR, 23-24)
- ⌚ '484 Patent explicitly shows seams in its 3D dome structure



(Ex. 1001, Fig. 10A (annotated))



(Ex. 1001, Fig. 10B (annotated))

Hong's Stated Benefits Apply To 3D Structures

Dr. Brookstein did not agree Hong's benefits were limited to 2D structures:

Do those benefits apply to knit-to-shape two-dimensional objects as compared with cut-and-sew two-dimensional objects?

MR. SMITH: Objection, form, beyond the scope.

A Yes. Knit-to-shape is going to be more efficient than cut-and-sew.

Q Whether it's 2D or 3D?

MR. SMITH: Same objection.

A I agree, whether it's 2D or 3D.

(Ex. 2005, 115:3-14)

Knitting And Then Folding Fabric Was Not New

Dr. Brookstein's testimony:

Q But what if I was able to
use these new knit-to-shape machines to
knit a specific shape that allowed me to
fold without any cutting steps? Wouldn't
that be an advance?

A No.

Q Why not?

A You could always take a
piece of fabric and fold it ever since
we've had knitting.

(Ex. 2005, 87:3-12)

Petitioner's Expert Considered The Entirety Of Hong

Dr. Brookstein's testimony refutes Nike's new sur-reply argument:

Q During the time when you rendered the opinions set forth in this declaration, did you consider the Hong reference in its entirety?

A Yes.

Q Approximately how many times?

A About 20 times.

(Ex. 2005, 12:2-9; *see also* Ex. 1002, ¶¶1-2)

Nike's Expert's Overly Narrow Interpretation Of The Claims

- ⌚ Dr. Pastore testified that, according to the '484 patent, "the sides are planar but the domed three-dimensional structure is a domed three-dimensional structure **while it's still inside the knitting machine.**"
- ⌚ Dr. Pastore's opinion is that the claims require the "domed three dimensional structure **exists in its three-dimensional shape within the flat knitting machine.**"

(Ex. 1022, 41:14-42:18)

Ground 3

**A POSA Would Have Reasonably
Expected Success In Knitting 3D
Structures In View Of Hong**

Hong Describes Knitting 3D Structures

The **development of 3D shaped knitted fabrics** for technical purposes on a flat knitting machine

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Department of Textile Engineering, Minho University, 4800 Guimarães, Portugal

HONG et al.: 3D SHAPED KNITTED FABRICS

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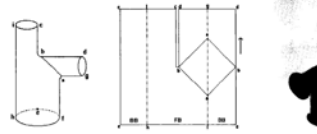


Fig. 6 - Tubular form: one main tube connected with two smaller tubes

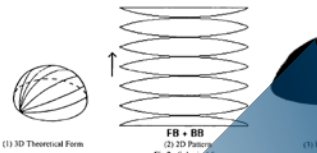


Fig. 7 - Spherical form

three-dimensional knitted fabric on the SES 122FF machine. As shown in Fig. 8(2), the increasing and decreasing lines are linear at 45° with the direction of knitting (wale direction). This type of form is also knitted with a double knitted structure introducing a wale ridge thread.

4.4 Car Seat Covers
Knitted fabrics have been widely used in the automotive industry. At present, the most used knitted fabrics are circular with knitted and wavy knitted fabrics. In the last few years, however, the flat knitted fabrics have also been used for this purpose. The advantages of using the flat knitting machine to produce car seat covers are as follows:

- knitting directly the 3D shapes can overcome fabric waste and diminish the labour cost inherent to the use of two-dimensional fabrics.

herent to the use of two-dimensional fabrics which have to fit the variable geometry of a three-dimensional seat bum. Automation, despite several attempts, has not been as successfully applied to this sector as it has to others, using two-dimensional fabrics.

There are different types of seat covers. In order to knit a complete cover, the knitting process might be extremely complex. The conventional electronic flat knitting machines have difficulties in producing this type of fabric. For this reason, a simple form of car seat cover (head rest) developed on the SES 122FF is presented (Fig. 9).

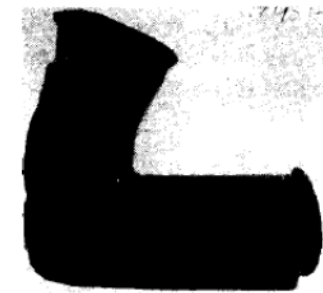
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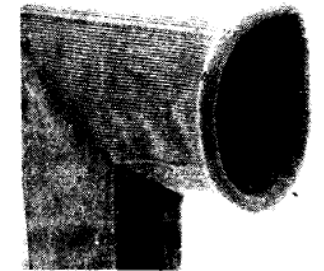
(Ex. 1005, 1, 5)



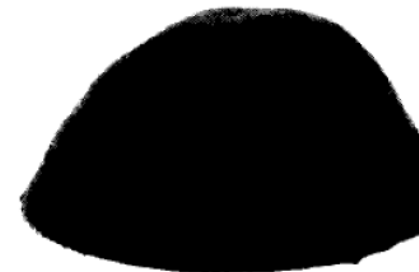
(3) Knitted Fabric



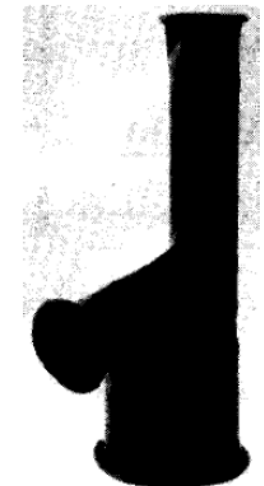
(3) Knitted Fabric



(3) Knitted Fabric



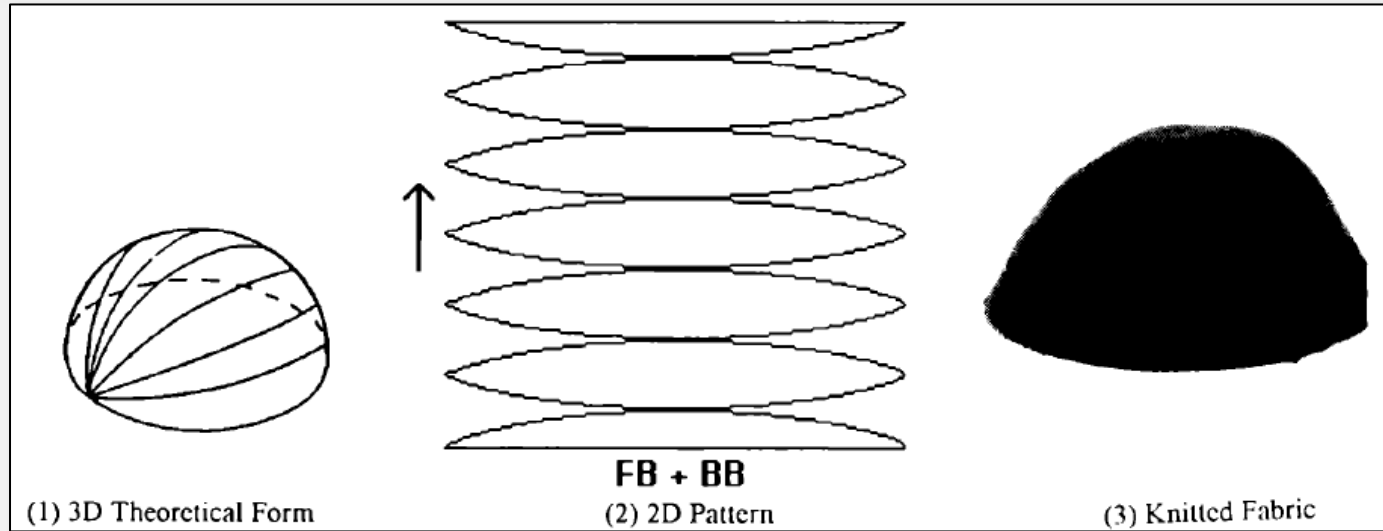
(3) Knitted Fabric



(3) Knitted Fabric

(Ex. 1005, 3-5)

Hong Explains How To Knit 3D Domed Structures



(Ex. 1005, 5)

“Regarding this figure, Hong describes that a three-dimensional concept (left) may be envisioned as a two-dimensional pattern (middle), which is used by an electronically controlled flat knitting machine to produce a knitted three-dimensional fabric (right).”

(Ex. 1002, ¶89)

4.2 Spherical Forms

It is not difficult to knit a spherical form in the SES 122FF flat knitting machine. To knit a spherical form with a radius R , it is necessary to start by transferring the three-dimensional concept to a two-dimensional pattern, as shown in Fig. 7, and then establishing the relation between the number of operating needles and the number of knitted courses as follows:

$$C = \frac{N \sqrt{1 - \sin^2(\pi n/N)}}{2\alpha M} \quad \dots (2)$$

(Ex. 1005, 4)

Nike's Expert Validated The Knitting Capabilities Of Hong's Machine

Dr. Pastore confirmed the Shima Seiki SES 122F machine could knit 3D structures:

Q. So by November 2006, both Stoll and Shima Seiki had flat knitting machines that were capable of forming flat knit structures that had three-dimensional structures; is that correct?

A. Yes, and as described in the context of the '484 patent.

(Ex. 1022, 26:13-18)

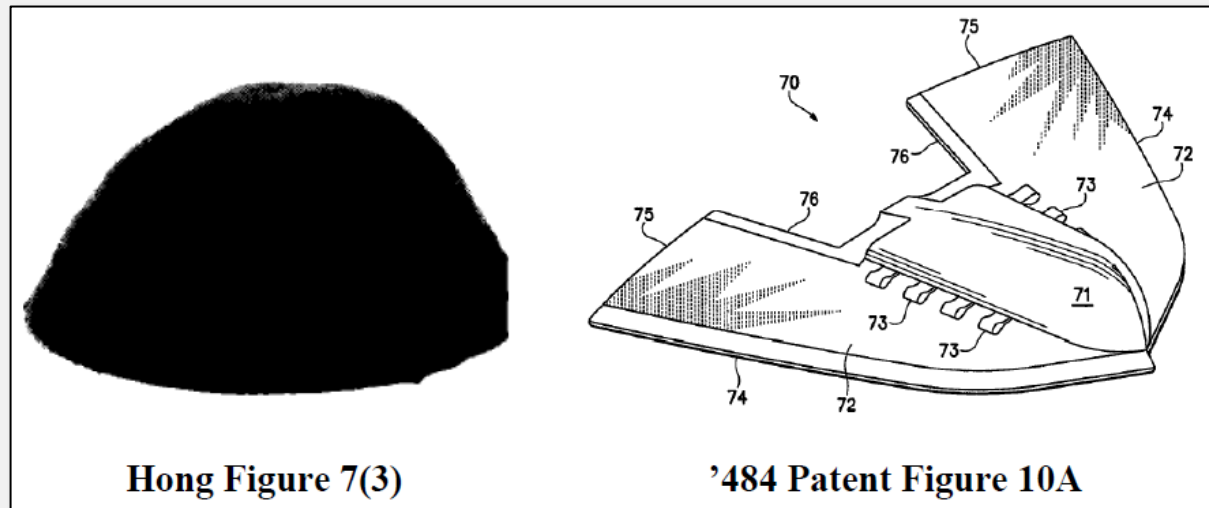
Q. So the Stoll and the Shima Seiki machines that had these capabilities to flat knit three-dimensional structures were available since the 1990s; is that correct?

A. Yes.

(Ex. 1022, 27:11-15)

Nike's Assertions On 3D Knitting Feasibility Lack Credibility

- ⌚ Nike argues that “[i]t simply wasn’t possible in 1994 or 2006 for a flat-knitting machine to output a three-dimensional ‘Knitted Fabric’ as shown in Figures 3(3)–9(3)” of Hong (POR, 20-21)
- ⌚ ‘484 Patent claims priority to 2006



(Ex. 1005, Fig. 7(3); Ex. 1001, Fig. 10A)

Ground 3

The Combination Discloses 3D Structures With Flat Side Portions

Nike Asserts Hong Does Not Teach 3D Structures With Flat Sides

Nike argues:

“lululemon also fails to show that Hong teaches or suggests forming a flat-knitted element with a three-dimensional structure that ‘extend[s] above the plane’ of the ‘side portion[s]’ that are in a ‘flattened configuration.’ Even if Hong teaches forming three-dimensional structures during the knitting process, Hong at best shows closed-periphery three-dimensional structures held together by seams lacking any flattened portions.”

(POR, 29-30)

Hong's Techniques Support Both 2D And 3D Knitting

Dr. Brookstein confirms versatility of Hong's techniques:

Q These five features listed in Hong, the features of the Shima Seiki reference allow a user to create two-dimensional knit-to-shape elements; correct?

A Correct.

Q Do any of these features apply only to three-dimensional knit-to-shape elements?

A No. I answered. Also two-dimensional elements.

Q So none of the features listed here on the first page of Hong on the Shima Seiki reference are directed only to three-dimensional knit-to-shape elements; right?

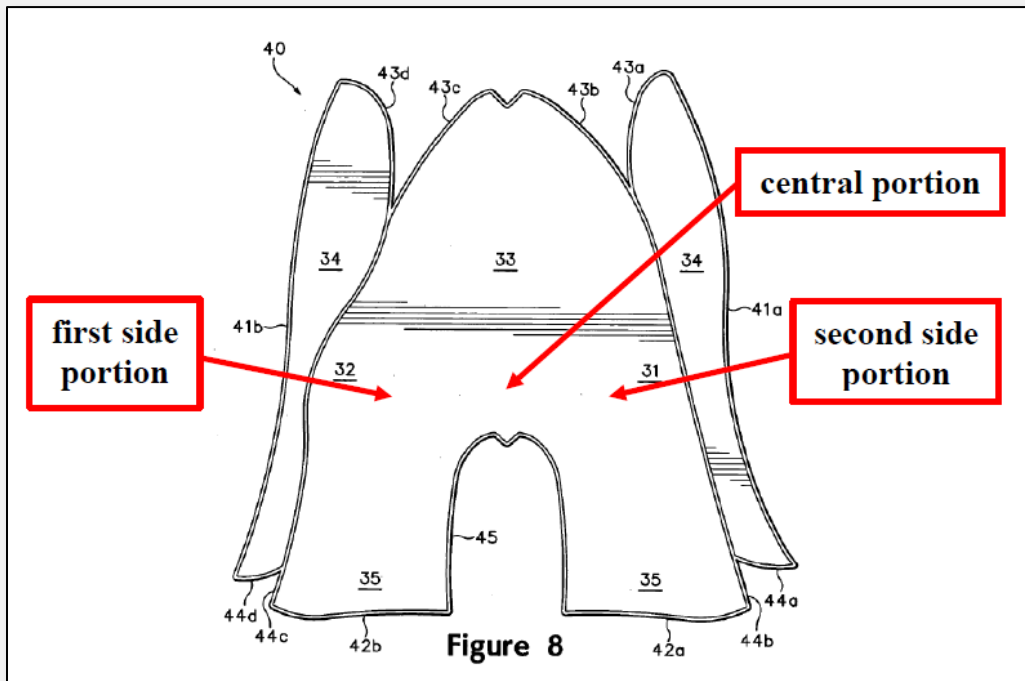
A To only three-dimensional? No. They would allow you to do two-dimensional too.

(Ex. 2005, 116:7-25)

Dua And Lockwood Undermine Nike's Argument

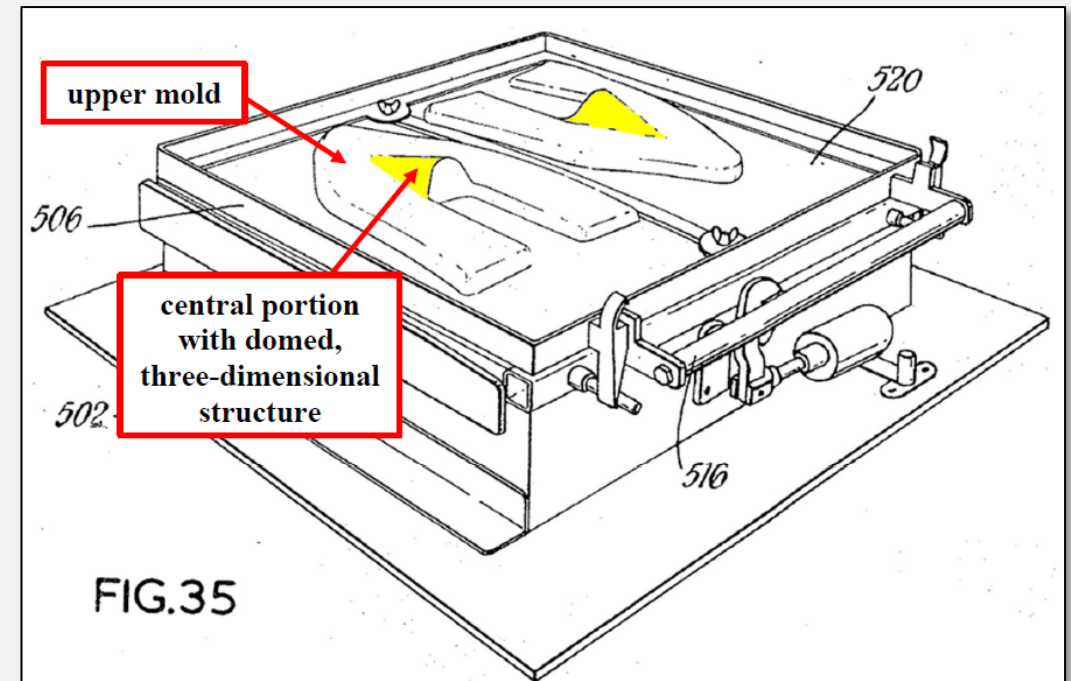
⌚ Dua and Lockwood disclose 3D structures with flat side portions

Dua



(Ex. 1004, Fig. 8 (annotated); Ex. 1002, ¶107)

Lockwood



(Ex. 1003, Fig. 35 (annotated); Ex. 1002, ¶103)

Petitioner's Expert Confirmed Advantages Of Domed 3D Structures

“Hong discloses flat knitting three-dimensional structures, including domed, three-dimensional structures, and **a POSA would have been motivated to include such a three-dimensional structure in an upper like Dua's. Lockwood discloses an upper with a domed, three-dimensional structure in the claimed location.** Lockwood itself identifies benefits of such a structure, namely that such a domed, three-dimensional structure desirably simplifies assembly of the upper, reduces the necessary cutting, and reduces waste.”

(Ex. 1002, ¶192)

“A POSA would have also been motivated to include a domed, three-dimensional structure (vamp cone portion) in the central portion of an upper like Dua's to **'simplify[] the assembly of uppers** by a technique of preshaping the upper forepart component' as disclosed in Lockwood. Lockwood states that **making different shoe styles 'is facilitated if the central raised portions 34 of the mold is smoothly curved.'**”

(Ex. 1002, ¶194 (citations omitted))

Ground 3

**Dua And Hong Together Disclose
The Loop Limitations Of Claims
2-4, 10, And 18-19**

Representative Claim 2 Of The '484 Patent

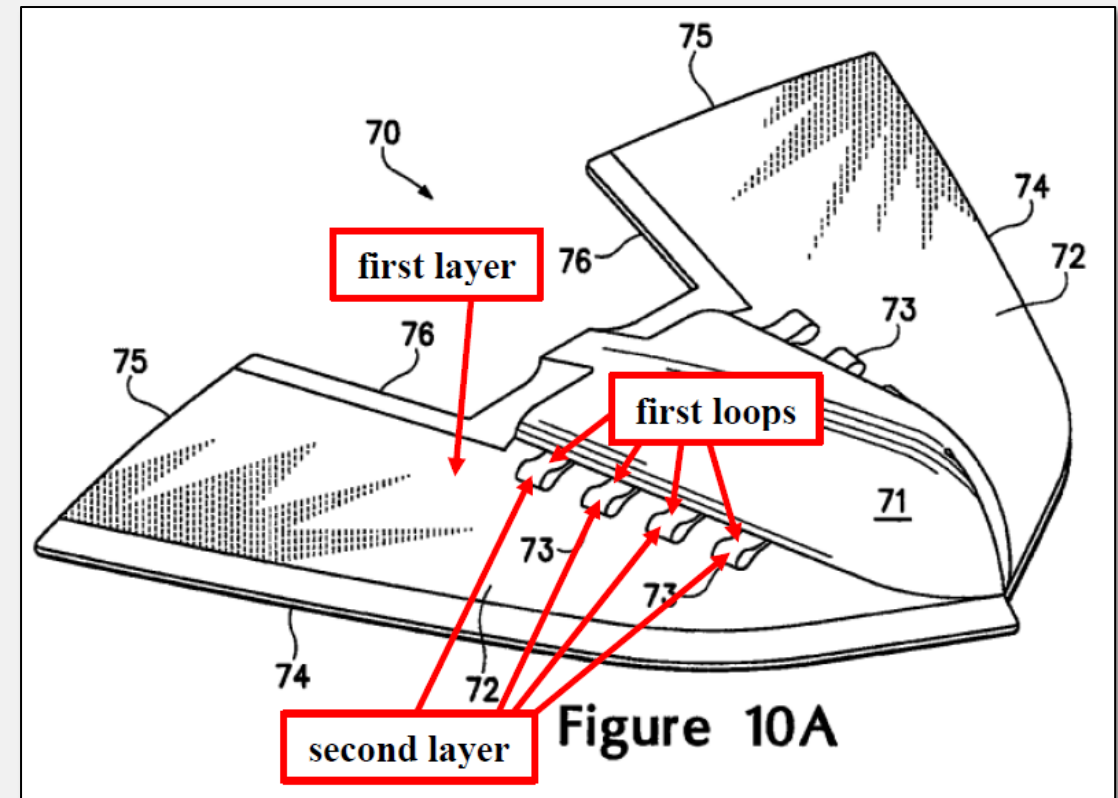
2. The article of footwear of claim 1, further comprising a first loop being formed as a second layer of unitary construction with the first layer.

(Ex. 1001, Claim 2)

'484 Patent's Upper With Lace Loops

As another example of a three-dimensional structure formed through a flat knitting process, an upper 70 is depicted in FIGS. 10A-10C. Upper 70 includes a central portion 71, a pair of side portions 72, and eight lace loops 73. Side portions 72 each include a side edge 74, a rear edge 75, and a central edge 76. When assembled into an article of footwear, central portion 71 extends over the foot, and side portions 72 wrap under the foot. More particularly, side edges 74 are joined to each other (e.g., with stitching) to form a seam that extends under the foot and along a longitudinal length of the foot. In addition, rear edges 75 are joined to each other (e.g., with stitching) to form a seam that extends upward along the heel. In this configuration, central edge 76 may define an opening that permits the foot to enter and exit a void within upper 70. A lace may also extend through lace loops 73 to provide adjustability.

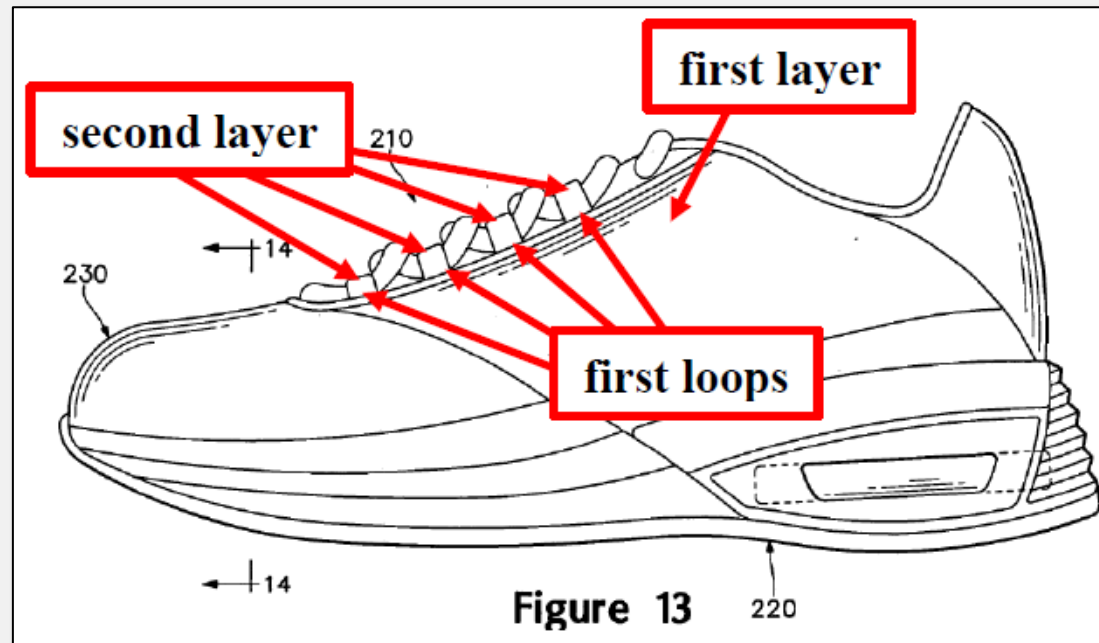
(Ex. 1001, 10:18-33)



(Ex. 1001, Fig. 10A (annotated))

Dua's Upper Includes Lace Loops

Dr. Brookstein explained Dua's Figure 13 shows "first loops for laces":



(Ex. 1004, Fig. 13 (annotated); Ex. 1002, ¶1111)

Dua Discloses A Unitary Knitted Upper

- ⌚ Dua discloses “textile element 40 forms both an exterior surface and an interior surface of upper 30.” (Ex. 1004, [0037])
- ⌚ Dua also discloses “[w]hereas a conventional upper includes various elements that stitched or adhesively joined, textile element 40 is a single, unitary element of material. [...] **By forming textile element 40 to be a single, unitary element of material, however, efficiency is increased in that upper 20 may include a single textile element, rather than numerous joined elements.**” (Ex. 1004, [0060])

Integrating Lace Loops In Dua's Upper Would Have Been Obvious

Dr. Brookstein confirmed POSA's understanding of lace loop integration further in view of Hong:

“Hong discloses ‘[b]y using the new flat knitting machines, it is possible not only to knit the new loop structures which are not possible on the conventional flat knitting machines, but also knit fully fashioned garments.’ This disclosure confirms **a POSA would have understood that flat-knitting machines like those in Hong could desirably create integrated loops, such as loops for laces, that permit creation of fully fashioned uppers with integrated lace loops like those illustrated in Dua.**”

(Ex. 1002, ¶1112 (citations omitted))

Ground 4

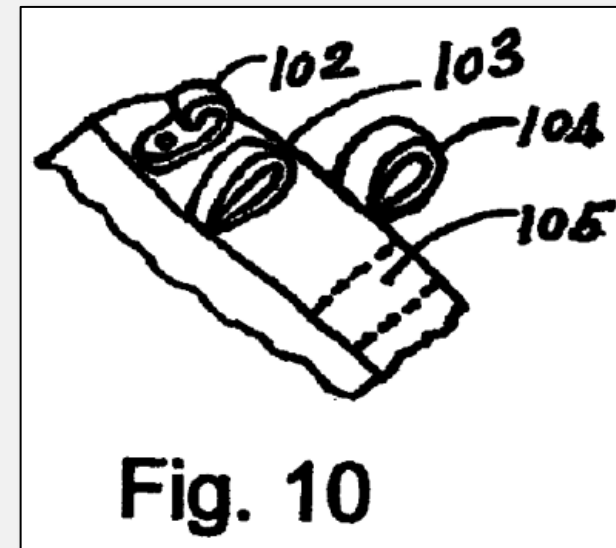
Voughlohn Discloses Integrating Lace Loops In Its Upper

[0377] For example, **FIG. 10** illustrates some examples of a lace receiver and/or a part of a lace-section fastener. The lace receiver and/or a part of the lace-section fastener is equivalent to any lace receiver and/or a part of any lace-section fastener in the present invention. The lace receiver and/or a part of the lace-section fastener can comprise:

[0378] a metallic or plastic hook **102**, attached to or integrated into the top-side of a footwear with rivet(s) or thread(s), so that the hook is fixed or movable; or

[0379] a plastic or fabric ring **103**, **104**, or **105**, attached to or integrated into the under-side of a footwear with rivet(s) or thread(s) (each of rings **103**, **104**, and **105** is a strip of material riveted or sewn to the footwear to create a fixed or movable ring). Rings **103**, **104**, and **105** are disposed on the top-side of, at the edge of, and on the under-side of one of the two opposite sides of the footwear, respectively.

(Ex. 1006, [0377]-[0379])



(Ex. 1006, Fig. 10)

Integrating Lace Loops Would Have Been Obvious Over Voughlohn

Dr. Brookstein's testimony:

“A POSA would have been motivated to incorporate Voughlohn's fabric rings in an upper like Dua's for many reasons, including to realize the benefits described in Voughlohn like providing ‘a convenient, safe, and aesthetic system, which could fasten a footwear quickly and easily, and is affordable, compact, and simple without exposing a bow knot.’”

“[T]he combination would have involved no more than **integrating a known structure in an upper like Dua's for a readily understood benefit to a POSA, such as permitting creation of fully fashioned uppers with integrated lace loops** like those illustrated in Dua's Figure 13.”

(Ex. 1002, ¶¶149-150)