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(54) **TERRY FABRIC WEAVE AND RESULTING TERRY FABRIC**

(57) The invention relates to terry fabric weaves, methods for weaving terry fabrics comprising such weaves, and resulting terry fabrics. In particular, the invention relates a terry fabric comprising a plurality of longitudinally oriented ground warp yarns pairs, a plurality

of longitudinally oriented pile warp yarns, and a plurality of weft yarns oriented substantially perpendicular to the ground warp yarn pairs. The terry fabric includes a repeated weave sequence comprising novel and inventive first and second interlacing arrangements.

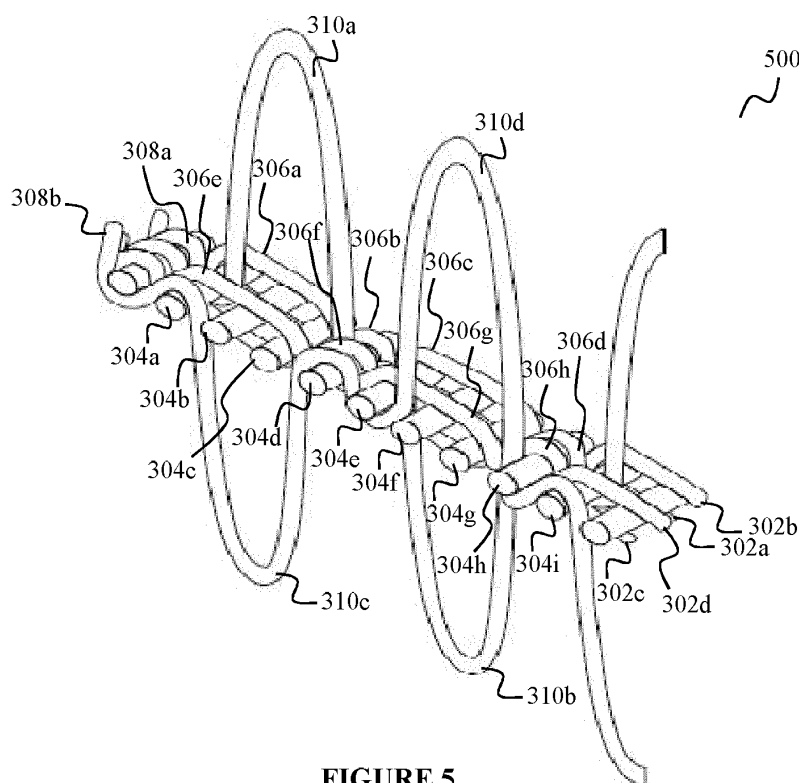


FIGURE 5

Description

Field of the Invention

[0001] The present invention relates to terry fabric weaves, methods for weaving terry fabrics comprising such weaves, and resulting terry fabrics. In particular, the invention relates to terry fabrics having improved material efficiencies, pull resistance, absorbency, softness and uniformity of texture.

Background

[0002] Terry fabrics are manufactured for several different end uses, including as towels, bathrobes, blankets, cleaning products, carpets and the like. Terry fabrics are considered advantageous in view of the fast drying, softness, ability to pick up particles, and ability to absorb moisture.

[0003] Terry fabrics typically comprise a woven ground fabric comprising a plurality of substantially parallel ground warp yarns and a plurality of substantially parallel ground weft yarns (or picks) - wherein the plurality of ground weft yarns intersect the plurality of ground warp yarns substantially perpendicularly. Additionally, a plurality of pile warp yarns are interwoven into the ground fabric in a direction substantially parallel to the ground warp yarns - and the pile weave forms a plurality of pile loops or terry loops above and below the woven ground fabric.

[0004] Ground warp yarns are interwoven with ground weft yarns at a relatively high tension and forms the base or substrate of the terry fabric. The pile warp yarns are interwoven at a lower tension and are advanced or "let off" from the loom beam at a higher rate than the ground warp yarns. During weaving, a series of adjacent ground weft yarns are subjected to a partial beat-up or "loose beat-up", where the weft yarn(s) may be pushed partially together using a comb (or "reed") or where the fell of the cloth is moved forward to enable a partial beat-up, while the pile warp yarns are permitted to "float" over two or more adjacent ground weft yarns. On an ensuing ground weft yarn (at the conclusion of a weaving repeat), the previously partially beat up ground weft yarns as well as the ensuing ground weft yarn are subjected to a "fast beat up", where all ground weft yarns are pushed fully up to the fell of the woven fabric - resulting in the floating pile threads forming loops that extend away from the ground substrate. A common terry pattern comprises a 3 pick sequence, wherein pile loops are interwoven into the ground fabric in a repeating pattern such that pile loops are formed using (and repeated every) 3 ground weft yarns. Less commonly known are 4, 5, 6 and 7 pick sequences - where interweaving a pile yarn into the ground fabric comprises repeating a pile loop every 4, 5, 6, or 7 ground weft yarns.

[0005] Figures 1 and 2 respectively provide transverse and perspective views of a terry weave sequence 100

comprising a 3 pick sequence. Terry weave sequence 100 comprises a pair of ground warp yarns 102a and 102b interwoven with a plurality of ground weft yarns in a repeating sequence such that first and second ground weft yarns 104a and 104b are placed within a first shed 106a formed by the pair of ground warp yarns, and a third ground weft yarn 104c is placed within a second shed 106b formed by the pair of ground warp yarns. Said repeating sequence forms a ground fabric on ground substrate terry weave sequence 100 additionally comprises pile yarns 108a and 108b wherein each of said pile yarns are interwoven into the ground substrate in a sequence that repeats every 3 ground weft yarns. The 3 pick sequence can be observed in case of pile loop 110a which is formed over the sequence of ground weft yarns 104a, 104b and 104c, and in case of pile loop 110b which is also formed over the sequence of ground weft yarns 104a, 104b and 104c. It would be understood from Figures 1 and 2 that in forming pile loop 110a, pile yarn 108a passes between ground weft yarns 104a and 104b and thereafter forms a pile loop over ground weft yarns 104b and 104c (i.e. on the top surface / face surface of the ground substrate), before the next 3 pick sequence is commenced. Likewise, in forming pile loop 110b, pile yarn 108b passes between ground weft yarns 104a and 104b and thereafter forms a pile loop over ground weft yarns 104b and 104c (i.e. on the bottom surface / back surface of the ground substrate), before the next 3 pick sequence is commenced.

[0006] While prior art weave sequences have been widely used in the past, it is desired to increase pick density of terry fabrics beyond the pick densities permitted by prior art weave sequences, as well as to improve pull resistance, absorbency, softness and uniformity of texture of the terry fabrics.

Summary

[0007] The invention provides a terry fabric comprising a plurality of longitudinally oriented ground warp yarn pairs, a plurality of longitudinally oriented pile warp yarns, and a plurality of weft yarns oriented substantially perpendicular to the ground warp yarn pairs. The terry fabric comprises a repeated weave sequence, said repeated weave sequence comprising a first interlacing arrangement comprising a first ground warp yarn pair and a first pile warp yarn interlaced adjacent to and in contact with at least one yarn within the first ground warp yarn pair, the first interlacing arrangement comprising (a) first, second and third weft yarns positioned within a first shed formed by the first ground warp yarn pair, (b) a fourth weft yarn positioned within a second shed formed by the first ground warp yarn pair, wherein the second and third weft yarns are positioned between the first and fourth weft yarns, (c) fifth, sixth and seventh weft yarns positioned within a third shed formed by the first ground warp yarn pair, (d) an eighth weft yarn positioned within a fourth shed formed by the first ground warp yarn pair, wherein

the sixth and seventh weft yarns are positioned between the fifth and eighth weft yarns, (f) a first pile loop formed by the first pile yarn, wherein said first pile loop is formed over the first, second, third and fourth weft yarns on one of a face surface or a back surface of a ground substrate, (g) a first region on a surface of the ground substrate that is opposite to the surface on which the first pile loop is formed, said first region having boundaries defined by (I) the first ground warp yarn pair, (II) a second ground warp yarn pair adjacent to the first ground warp yarn pair, (III) the first weft yarn and (IV) the fourth weft yarn, wherein said first region is free of pile loop formation, (h) a second pile loop formed by the first pile yarn, wherein said second pile loop is formed over the fifth, sixth, seventh and eighth weft yarns on one of the face surface or the back surface of the ground substrate, (i) a second region on a surface of the ground substrate that is opposite to the surface on which the second pile loop is formed, said second region having boundaries defined by (I) the first ground warp yarn pair, (II) the second ground warp yarn pair, (III) the fifth weft yarn and (IV) the eighth weft yarn, wherein said second region is free of pile loop formation;

[0008] The repeated weave sequence additionally comprises a second interlacing arrangement comprising the second ground warp yarn pair and a second pile warp yarn interlaced adjacent to and in contact with at least one yarn within the second ground warp yarn pair. The second interlacing arrangement additionally comprises (a) the first, second and third weft yarns positioned within a fifth shed formed by the second ground warp yarn pair, (b) the fourth weft yarn positioned within a sixth shed formed by the second ground warp yarn pair, (c) the fifth, sixth and seventh weft yarns positioned within a seventh shed formed by the second ground warp yarn pair, (d) the eighth weft yarn positioned within an eighth shed formed by the second ground warp yarn pair, (e) a third pile loop formed by the second pile yarn, wherein said third pile loop is formed over the first, second, third and fourth weft yarns on one of the face surface or the back surface of the ground substrate, (f) a third region on a surface of the ground substrate that is opposite to the surface on which the third pile loop is formed, said third region having boundaries defined by (I) the second ground warp yarn pair, (II) a third ground warp yarn pair adjacent to the second ground warp yarn pair and positioned such that the second ground warp yarn pair is interposed between the third ground warp yarn pair and the first ground warp yarn pair, (III) the first weft yarn and (IV) the fourth weft yarn, wherein said third region is free of pile loop formation, (g) a fourth pile loop formed by the second pile yarn, wherein said fourth pile loop is formed over the fifth, sixth, seventh and eighth weft yarns on one of the face surface or the back surface of the ground substrate, and (h) a fourth region on a surface of the ground substrate that is opposite to the surface on which the fourth pile loop is formed, said fourth region having boundaries defined by (I) the second ground warp yarn pair, (II) the third ground warp yarn pair, (III) the fifth weft

yarn and (IV) the eighth weft yarn, wherein said fourth region is free of pile loop formation.

[0009] Further, in the repeated weave sequence, one of the first pile loop and the third pile loop is formed on the face surface of the ground substrate, and the other of the first pile loop and the third pile loop is formed on the back surface of the ground substrate. Additionally, one of the second pile loop and the fourth pile loop is formed on the face surface of the ground substrate, and the other of the second pile loop and the fourth pile loop is formed on the back surface of the ground substrate.

[0010] In an embodiment of the terry fabric, the repeated weave sequence may ensure one or more of, positioning the second shed adjacent to the first shed, positioning the third shed adjacent to the second shed, positioning the fourth shed adjacent to the third shed, positioning the sixth shed adjacent to the fifth shed, positioning the seventh shed adjacent to the sixth shed, and positioning the eighth shed adjacent to the seventh shed.

[0011] The repeated weave sequence may also ensure that at least one additional weft yarn is positioned between any of the second shed and the first shed, the third shed and the second shed, the fourth shed and the third shed, the sixth shed and the fifth shed, the seventh shed and the sixth shed, or the eighth shed and the seventh shed.

[0012] Any of the first shed, third shed, fifth shed or seventh shed may have more than three weft yarns positioned therewithin. Any one of the second shed, fourth shed, sixth shed or eighth shed may have more than one weft yarn positioned therewithin.

[0013] In an embodiment, in the first interlacing arrangement, the first pile loop and the second pile loop may be formed on opposite surfaces of the ground substrate, while in the second interlacing arrangement, the third pile loop and the fourth pile loop may be formed on opposite surfaces of the ground substrate.

[0014] In an embodiment, in the first interlacing arrangement, the first pile loop and the second pile loop may be formed on one of the face surface or the back surface of the ground substrate, while in the second interlacing arrangement, the third pile loop and the fourth pile loop may be formed on the other of the face surface or the back surface of the ground substrate.

[0015] The first ground warp yarn pair and the second ground warp yarn pair may be adjacent yarn pairs, having only a single pile yarn interposed therebetween. Alternately, the first ground warp yarn pair and the second ground warp yarn pair may have at least one additional ground warp yarn pair interposed therebetween.

[0016] In an embodiment of the terry fabric, a plurality of instances of the repeated weave sequences may be implemented within the terry fabric. In a specific embodiment, a first instance of the repeated weave sequence may be located immediately adjacent to a second instance of the repeated weave sequence.

[0017] In an embodiment of the terry fabric, the first pile warp yarn and the second pile warp yarn may be

adjacent pile warp yarns.

[0018] The first pile yarn or the second pile yarn may be interlaced into the ground substrate in a repeating sequence that forms each pile loop over 4 or more weft yarns. In a more specific embodiment, the first pile yarn or the second pile yarn may be interlaced into the ground substrate in a repeating sequence that forms each pile loop over 4 to 6 weft yarns.

[0019] The invention additionally provides a method of manufacturing a terry fabric comprising a plurality of longitudinally oriented ground warp yarns pairs, a plurality of longitudinally oriented pile warp yarns, and a plurality of weft yarns oriented substantially perpendicular to the ground warp yarn pairs. The method comprises weaving a terry fabric using a plurality of instances of a repeated weave sequence.

[0020] Weaving each repeated weave sequence comprises weaving a first interlacing arrangement comprising a first ground warp yarn pair and a first pile warp yarn interlaced adjacent to and in contact with at least one yarn within the first ground warp yarn pair, comprising the steps of (a) placement of first, second and third weft yarns within a first shed formed by the first ground warp yarn pair, (b) placement of a fourth weft yarn within a second shed formed by the first ground warp yarn pair, wherein the second and third weft yarns are positioned between the first and fourth weft yarns, (c) placement of fifth, sixth and seventh weft yarns within a third shed formed by the first ground warp yarn pair, (d) placement of an eighth weft yarn within a fourth shed formed by the first ground warp yarn pair, wherein the sixth and seventh weft yarns are positioned between the fifth and eighth weft yarns, (e) forming a first pile loop, wherein said first pile loop is formed with the first pile yarn, and wherein said first pile loop is formed over the first, second, third and fourth weft yarns, on one of a face surface or a back surface of a ground substrate (f) forming a first region on a surface of the ground substrate that is opposite to the surface on which the first pile loop is formed, said first region having boundaries defined by (I) the first ground warp yarn pair, (II) a second ground warp yarn pair adjacent to the first ground warp yarn pair, (III) the first weft yarn and (IV) the fourth weft yarn, wherein said first region is free of pile loop formation, (g) forming a second pile loop, wherein said second pile loop is formed by the first pile yarn, and wherein said second pile loop is formed over the fifth, sixth, seventh and eighth weft yarns, on one of the face surface or the back surface of the ground substrate, (h) forming a second region on a surface of the ground substrate that is opposite to the surface on which the second pile loop is formed, said second region having boundaries defined by (I) the first ground warp yarn pair, (II) the second ground warp yarn pair, (III) the fifth weft yarn and (IV) the eighth weft yarn, wherein said second region is free of pile loop formation.

[0021] Weaving each repeated weave sequence additionally comprises weaving a second interlacing arrangement comprising the second ground warp yarn pair

and a second pile warp yarn interlaced adjacent to and in contact with at least one yarn within the second ground warp yarn pair, comprising the steps of (a) placement of the first, second and third weft yarns within a fifth shed formed by the second ground warp yarn pair, (b) placement of the fourth weft yarn within a sixth shed formed by the second ground warp yarn pair, (c) placement of the fifth, sixth and seventh weft yarns within a seventh shed formed by the second ground warp yarn pair, (d) the eighth weft yarn positioned within an eighth shed formed by the second ground warp yarn pair, (e) forming a third pile loop, wherein said third pile loop is formed by the second pile yarn, and wherein said third pile loop is formed over the first, second, third and fourth weft yarns, on one of the face surface or the back surface of the ground substrate, (f) forming a third region on a surface of the ground substrate that is opposite to the surface on which the third pile loop is formed, said third region having boundaries defined by (I) the second ground warp yarn pair, (II) a third ground warp yarn pair adjacent to the second ground warp yarn pair and positioned such that the second ground warp yarn pair is interposed between the third ground warp yarn pair and the first ground warp yarn pair, (III) the first weft yarn and (IV) the fourth weft yarn, wherein said third region is free of pile loop formation, (g) forming a fourth pile loop, wherein said fourth pile loop is formed by the second pile yarn, and wherein said fourth pile loop is formed over the fifth, sixth, seventh and eighth weft yarns on one of the face surface or the back surface of the ground substrate, (h) forming a fourth region on a surface of the ground substrate that is opposite to the surface on which the fourth pile loop is formed, said fourth region having boundaries defined by (I) the second ground warp yarn pair, (II) the third ground warp yarn pair, (III) the fifth weft yarn and (IV) the eighth weft yarn, wherein said fourth region is free of pile loop formation.

[0022] The method of weaving each repeated sequence may additionally ensure that (a) one of the first pile loop and the third pile loop is formed on the face surface of the ground substrate, and the other of the first pile loop and the third pile loop is formed on the back surface of the ground substrate, and (b) one of the second pile loop and the fourth pile loop is formed on the face surface of the ground substrate, and the other of the second pile loop and the fourth pile loop is formed on the back surface of the ground substrate.

[0023] In an embodiment of the invention, the method of manufacturing the terry fabric additionally comprises shearing one or more of the first pile loop, second pile loop, third pile loop and / or fourth pile loop, to generate cut tufted pile tuft on at least one surface of the ground substrate.

Brief Description of the Accompanying Drawings

[0024]

Figures 1 and 2 respectively provide transverse and perspective views of prior art 3 pick repeating terry weave sequences.

Figures 3, 4 and 5 illustrate a terry weave having a 4 pick repeating sequence in accordance with the present invention.

Figures 6, 7 and 8 illustrate perspective and transverse views of another terry weave having a 4 pick repeating sequence in accordance with the present invention.

Figures 9, 10 and 11 illustrate perspective and transverse views of a terry weave having a 5 pick repeating sequence in accordance with the present invention.

Figures 12, 13 and 14 illustrate perspective and transverse views of a terry weave having a 5 pick repeating sequence in accordance with the present invention.

Figure 15A is a photograph of a terry fabric manufactured in accordance with the terry weave sequence illustrated in Figures 1 and 2.

Figure 15B is a photograph of a terry fabric manufactured in accordance with the terry weave sequence of Figures 3, 4 and 5.

Figure 16 is a table setting out the results of a comparative analysis of fabrics manufactured in accordance with the present invention against fabrics manufactured in accordance with terry weave sequences previously known in the art.

Detailed Description

[0025] The present invention comprises a terry fabric weave sequence, resulting terry fabric and a method for manufacturing a terry fabric implementing the specific terry fabric weave sequence. In particular the terry fabric weave sequence of the present invention comprises a repeating weave sequence that has been found to be significantly advantageous in comparison with prior art terry weaves.

[0026] For the purposes of the present invention each terry fabric weave sequence comprises a plurality of longitudinally oriented ground warp yarn pairs, a plurality of pile warp yarns interwoven in parallel with the ground warp yarn pairs, and a plurality of weft yarns oriented substantially perpendicular to the ground warp yarn pairs. The terry weave sequence is a repeating weave sequence, wherein each repeated weave sequence comprises of first and second interlacing arrangement.

[0027] An embodiment of the terry weave sequence of the present invention is explained in detail below with

reference to Figures 3, 4 and 5.

[0028] Figures 3 and 4 respectively illustrate first and second interlacing arrangements that are incorporated within a terry weave sequence in accordance with the present invention. Figure 3 illustrates a first interlacing arrangement, Figure 4 illustrates a second interlacing arrangement. Figure 5 illustrates the terry weave sequence incorporating both the first interlacing arrangement and the second interlacing arrangement.

[0029] Figure 3 illustrates a first interlacing arrangement 300A comprising a first ground warp yarn pair 302a, 302b, a first pile warp yarn 308a, and a plurality of ground weft yarns 304a to 304h. The first ground warp yarn pair comprises warp yarns 302a and 302b that are interlaced and positioned adjacent to first pile warp yarn 308a. The first ground warp yarn pair 302a, 302b is interlaced with ground weft yarns such that first weft yarn 304a, second weft yarn 304b and third weft yarn 304c are positioned within a first shed 306a formed by first ground warp yarn pair 302a and 302b. Additionally, a fourth weft yarn 304d is positioned within a second shed 306b formed by first ground warp yarn pair 302a and 302b. A fifth weft yarn 304e, sixth weft yarn 304f and seventh weft yarn 304g are positioned within a third shed 306c formed by first ground warp yarn pair 302a and 302b. Additionally, an eighth weft yarn 304h is positioned within a fourth shed 306d formed by first ground warp yarn pair 302a and 302b. Eighth weft yarn 304h is followed by immediately adjacent weft yarn 304i (adjacent weft yarn 304i forms part of a next instance of the first interlacing arrangement within a repeating sequence).

[0030] First pile warp yarn 308a is interlaced within first interlacing arrangement 300A so as to form a first pile loop 310a and a second pile loop 310b. First pile loop 310a is formed over first weft yarn 304a, second weft yarn 304b, third weft yarn 304c and fourth weft yarn 304d. More specifically first pile loop 310a is formed by passing first pile warp yarn 308a (i) between first weft yarn 304a and second weft yarn 304b, (ii) over second weft yarn 304b and third weft yarn 304c in a loop (formed on a top surface / face surface of the ground substrate), (iii) between third weft yarn 304c and fourth weft yarn 304d, and (iv) between fourth weft yarn 304d and fifth weft yarn 304e. Likewise, second pile loop 310b is formed over fifth weft yarn 304e, sixth weft yarn 304f, seventh weft yarn 304g and eighth weft yarn 304h. Specifically, second pile loop 310b is formed by passing first pile warp yarn 308a (i) between fifth weft yarn 304e and sixth weft yarn 304f, (ii) over sixth weft yarn 304f and seventh weft yarn 304g in a loop (formed on a bottom surface / back surface of the ground substrate), (iii) between seventh weft yarn 304g and eighth weft yarn 304h, and (iv) between eighth weft yarn 304h and ninth weft yarn 304i.

[0031] Figure 4 illustrates a second interlacing arrangement 300B comprising a second ground warp yarn pair 302c, 302d, and a second pile warp yarn 308b, respectively interlaced through ground weft yarns 304a to 304h. The second ground warp yarn pair comprises warp

yarns 302c and 302d that are interlaced and positioned adjacent to second pile warp yarn 308b. The second ground warp yarn pair 302c, 302d is interlaced with ground weft yarns such that first weft yarn 304a, second weft yarn 304b and third weft yarn 304c are positioned within a fifth shed 306e formed by second ground warp yarn pair 302c and 302d. Fourth weft yarn 304d is positioned within a sixth shed 306f formed by second ground warp yarn pair 302c and 302d. Fifth weft yarn 304e, sixth weft yarn 304f and seventh weft yarn 304g are positioned within a seventh shed 306g formed by second ground warp yarn pair 302c and 302d. Eighth weft yarn 304h is positioned within an eighth shed 306h formed by second ground warp yarn pair 302c and 302d.

[0032] Second pile warp yarn 308b is interlaced within second interlacing arrangement 300B so as to form a third pile loop 310c and a fourth pile loop 310d. Third pile loop 310c is formed over first weft yarn 304a, second weft yarn 304b, third weft yarn 304c and fourth weft yarn 304d. More specifically, third pile loop 310c is formed by passing second pile warp yarn 308b (i) between first weft yarn 304a and second weft yarn 304b, (ii) over second weft yarn 304b and third weft yarn 304c in a loop (formed on a bottom surface / back surface of the ground substrate), (iii) between third weft yarn 304c and fourth weft yarn 304d and (iv) between fourth weft yarn 304d and fifth weft yarn 304e. Likewise, fourth pile loop 310d is formed over fifth weft yarn 304e, sixth weft yarn 304f, seventh weft yarn 304g and eighth weft yarn 304h. Specifically, fourth pile loop 310d is formed by passing second pile warp yarn 308b (i) between fifth weft yarn 304e and sixth weft yarn 304f, (ii) over sixth weft yarn 304f and seventh weft yarn 304g in a loop (formed on a top surface / face surface of the ground substrate), (iii) between seventh weft yarn 304g and eighth weft yarn 304h and (iv) between eighth weft yarn 304h and a ninth weft yarn 304i.

[0033] Figure 5 illustrates a terry weave sequence 500 in accordance with the present invention, wherein, first interlacing arrangement 300A (as illustrated in Figure 3) and second interlacing arrangement 300B (as illustrated in Figure 4) are incorporated within terry weave sequence 500.

[0034] As illustrated in Figure 5, first pile loop 310a is formed on a face surface of the ground substrate (i.e. the ground fabric comprising interwoven warp and weft yarns). Simultaneously the opposite surface (i.e. the back surface) of the ground substrate comprises a first region having boundaries defined by (a) first ground warp yarn pair 302a, 302b, (b) second ground warp yarn pair 302c, 302d, (c) first weft yarn 304a and (d) fourth weft yarn 304d - which first region is devoid or free of pile loop formation (i.e. no pile loop is formed over this region on said back surface of the ground substrate).

[0035] Likewise, second pile loop 310b is formed on a back surface of the ground substrate. Simultaneously an opposite surface (i.e. the face surface) of the ground substrate comprises a second region having boundaries defined by (a) first ground warp yarn pair 302a, 302b, (b)

second ground warp yarn pair 302c, 302d, (c) fifth weft yarn 304e and (d) eighth weft yarn 304h - which second region is devoid or free of pile loop formation (i.e. no pile loop is provided in this region on said face surface of the ground substrate).

[0036] Additionally, as illustrated in Figure 5, third pile loop 310c is formed on a back surface of the ground substrate. Simultaneously an opposite surface of the ground substrate (i.e. the face surface) comprises a third region having boundaries defined by (a) second ground warp yarn pair 302c, 302d, (b) a third ground warp yarn pair (not shown in Figure 5) that is adjacent to second ground warp yarn pair 302c, 302d, and which is positioned such that second ground warp yarn pair 302c, 302d is interposed between said third ground warp yarn pair and first ground warp yarn pair 302a, 302b, (c) first weft yarn 304a and (d) fourth weft yarn 304d - which third region is devoid or free of pile loop formation (i.e. no pile loop is formed over this region on the face surface of the ground substrate).

[0037] Likewise, fourth pile loop 310d is formed on a face surface of the ground substrate. Simultaneously an opposite surface (i.e. the back surface) of the ground substrate comprises a fourth region having boundaries defined by (a) second ground warp yarn pair 302c, 302d, (b) the third ground warp yarn pair, (c) fifth weft yarn 304e and (d) eighth weft yarn 304h - which fourth region is devoid or free of pile loop formation (i.e. no pile loop is formed over this region on back surface of the ground substrate).

[0038] Additionally, as is apparent from weave sequence 500 as illustrated in Figure 5, first pile loop 310a and third pile loop 310c are respectively formed on opposite surfaces of the ground substrate, while second pile loop 310b and fourth pile loop 310d are respectively formed on opposite surfaces of the ground substrate.

[0039] The terry weave sequence 500 illustrated in Figure 5 shows first ground warp yarn pair 302a, 302b positioned adjacent to second ground warp yarn pair 302c, 302d with only first pile yarn 308a interposed therebetween. For the purposes of the present invention however, one or more additional ground warp yarn pairs may be interposed between first ground warp yarn pair 302a, 302b and second ground warp yarn pair 302c, 302d - provided however that no other pile yarn (i.e. no pile yarn other than first pile yarn 308a) is interposed between first ground warp yarn pair 302a, 302b and second ground warp yarn pair 302c, 302d.

[0040] The illustrations in Figures 3 to 5 illustrate embodiments of the terry weave sequence where first pile yarn 308a forms pile loops alternately on face and back surfaces of the ground substrate, while second pile yarn 308b also forms pile loops alternately on face and back surfaces of the ground substrate. In another embodiment of the invention, illustrated in Figures 6, 7 and 8, the first pile yarn may form pile loops on only one of the face or back surface of the ground substrate while the second pile yarn may form pile loops on only the other of the face

or back surface of the ground substrate.

[0041] Figures 6 and 7 respectively illustrate first and second interlacing arrangements that are incorporated within a second embodiment of a terry weave sequence in accordance with the present invention. Figure 6 illustrates a first interlacing arrangement, Figure 7 illustrates a second interlacing arrangement. Figure 8 illustrates an embodiment of the terry weave sequence incorporating both of said first interlacing arrangement and the second interlacing arrangement.

[0042] Figure 6 illustrates a first interlacing arrangement 600A comprising a first ground warp yarn pair 602a, 602b, a first pile warp yarn 608a, and a plurality of ground weft yarns 604a to 604i. The first ground warp yarn pair comprises warp yarns 602a and 602b that are interlaced and positioned adjacent to first pile warp yarn 608a. The first ground warp yarn pair 602a, 602b is interlaced with ground weft yarns such that first weft yarn 604a, second weft yarn 604b and third weft yarn 604c are positioned within a first shed 606a formed by first ground warp yarn pair 602a and 602b. Additionally, a fourth weft yarn 604d is positioned within a second shed 606b formed by first ground warp yarn pair 602a and 602b. A fifth weft yarn 604e, sixth weft yarn 604f and seventh weft yarn 604g are positioned within a third shed 606c formed by first ground warp yarn pair 602a and 602b. Additionally, an eighth weft yarn 604h is positioned within a fourth shed 606d formed by first ground warp yarn pair 602a and 602b. Eighth weft yarn 604h is followed by immediately adjacent weft yarn 604i.

[0043] First pile warp yarn 608a is interlaced within first interlacing arrangement 600A so as to form a first pile loop 610a and a second pile loop 610b. First pile loop 610a is formed over first weft yarn 604a, second weft yarn 604b, third weft yarn 604c and fourth weft yarn 604d. More specifically first pile loop 610a is formed by passing first pile warp yarn 608a (i) between first weft yarn 604a and second weft yarn 604b, (ii) over second weft yarn 604b and third weft yarn 604c in a loop (formed on a top surface / face surface of the ground substrate), (iii) between third weft yarn 604c and fourth weft yarn 604d, and (iv) beneath fourth weft yarn 604d and fifth weft yarn 604e. Likewise, second pile loop 610b is formed over fifth weft yarn 604e, sixth weft yarn 604f, seventh weft yarn 604g and eighth weft yarn 604h. Specifically, second pile loop 610b is formed by passing first pile warp yarn 608a (i) between fifth weft yarn 604e and sixth weft yarn 604f, (ii) over sixth weft yarn 604f and seventh weft yarn 604g in a loop (formed on a top surface / face surface of the ground substrate), (iii) between seventh weft yarn 604g and eighth weft yarn 604h, and (iv) thereafter beneath eighth weft yarn 604h and ninth weft yarn 604i.

[0044] Figure 7 illustrates a second interlacing arrangement 600B comprising a second ground warp yarn pair 602c, 602d, and a second pile warp yarn 608b, respectively interlaced through ground weft yarns 604a to 604i. The second ground warp yarn pair comprises warp yarns 602c and 602d that are interlaced and positioned

adjacent to second pile warp yarn 608b. The second ground warp yarn pair 602c, 602d is interlaced with ground weft yarns such that first weft yarn 604a, second weft yarn 604b and third weft yarn 604c are positioned within a fifth shed 606e formed by second ground warp yarn pair 602c and 602d. Fourth weft yarn 604d is positioned within a sixth shed 606f formed by second ground warp yarn pair 602c and 602d. Fifth weft yarn 604e, sixth weft yarn 604f and seventh weft yarn 604g are positioned within a seventh shed 606g formed by second ground warp yarn pair 602c and 602d. Eighth weft yarn 604h is positioned within an eighth shed 606h formed by second ground warp yarn pair 602c and 602d.

[0045] Second pile warp yarn 608b is interlaced within second interlacing arrangement 600B so as to form a third pile loop 610c and a fourth pile loop 610d. Third pile loop 610c is formed over first weft yarn 604a, second weft yarn 604b, third weft yarn 604c and fourth weft yarn 604d. More specifically, third pile loop 610c is formed by passing second pile warp yarn 608b (i) between first weft yarn 604a and second weft yarn 604b, (ii) over second weft yarn 604b and third weft yarn 604c in a loop (formed on a bottom surface / back surface of the ground substrate), (iii) between third weft yarn 604c and fourth weft yarn 604d and (iv) and over fourth weft yarn 604d and fifth weft yarn 604e. Likewise, fourth pile loop 610d is formed over fifth weft yarn 604e, sixth weft yarn 604f, seventh weft yarn 604g and eighth weft yarn 604h. Specifically, fourth pile loop 610d is formed by passing second pile warp yarn 608b (i) between fifth weft yarn 604e and sixth weft yarn 604f, (ii) over sixth weft yarn 604f and seventh weft yarn 604g in a loop (formed on a bottom surface / back surface of the ground substrate), (iii) between seventh weft yarn 604g and eighth weft yarn 604h and (iv) over eighth weft yarn 604h and a ninth weft yarn 604i.

[0046] Figure 8 illustrates a terry weave sequence 800 in accordance with the present invention, wherein, first interlacing arrangement 600A (as illustrated in Figure 6) and second interlacing arrangement 600B (as illustrated in Figure 7) are incorporated within terry weave sequence 800.

[0047] As illustrated in Figure 8, first pile loop 610a is formed on a face surface of the ground substrate (i.e. the ground fabric comprising interwoven warp and weft yarns). Simultaneously the opposite surface (i.e. the back surface) of the ground substrate comprises a first region having boundaries defined by (a) first ground warp yarn pair 602a, 602b, (b) second ground warp yarn pair 602c, 602d, (c) first weft yarn 604a and (d) fourth weft yarn 604d - which first region is devoid or free of pile loop formation (i.e. no pile loop is formed over this region on said back surface of the ground substrate).

[0048] Likewise, second pile loop 610b is formed on a face surface of the ground substrate. Simultaneously an opposite surface (i.e. the back surface) of the ground substrate comprises a second region having boundaries defined by (a) first ground warp yarn pair 602a, 602b, (b)

second ground warp yarn pair 602c, 602d, (c) fifth weft yarn 604e and (d) eighth weft yarn 604h - which second region is devoid or free of pile loop formation (i.e. no pile loop is provided in this region on said back surface of the ground substrate).

[0049] Additionally, as illustrated in Figure 8, third pile loop 610c is formed on a back surface of the ground substrate. Simultaneously an opposite surface of the ground substrate (i.e. the face surface) comprises a third region having boundaries defined by (a) second ground warp yarn pair 602c, 602d, (b) a third ground warp yarn pair (not shown in Figure 8) that is adjacent to second ground warp yarn pair 602c, 602d, and which is positioned such that second ground warp yarn pair 602c, 602d is interposed between said third ground warp yarn pair and first ground warp yarn pair 602a, 602b, (c) first weft yarn 604a and (d) fourth weft yarn 604d - which third region is devoid or free of pile loop formation (i.e. no pile loop is formed over this region on the face surface of the ground substrate).

[0050] Likewise, fourth pile loop 610d is formed on a back surface of the ground substrate. Simultaneously an opposite surface (i.e. the face surface) of the ground substrate comprises a fourth region having boundaries defined by (a) second ground warp yarn pair 602c, 602d, (b) the third ground warp yarn pair, (c) fifth weft yarn 604e and (d) eighth weft yarn 604h - which fourth region is devoid or free of pile loop formation (i.e. no pile loop is formed over this region on the face surface of the ground substrate).

[0051] Additionally, as is apparent from weave sequence 800 as illustrated in Figure 8, first pile loop 610a and third pile loop 610c are respectively formed on opposite surfaces of the ground substrate, while second pile loop 610b and fourth pile loop 610d are respectively formed on opposite surfaces of the ground substrate.

[0052] The terry weave sequence 800 illustrated in Figure 8 shows first ground warp yarn pair 602a, 602b positioned adjacent to second ground warp yarn pair 602c, 602d with only first pile yarn 608a interposed therebetween. For the purposes of the present invention however, one or more additional ground warp yarn pairs may be interposed between first ground warp yarn pair 602a, 602b and second ground warp yarn pair 602c, 602d. In an embodiment of the invention, while one or more additional ground warp yarn pairs may be interposed between first ground warp yarn pair 602a, 602b and second ground warp yarn pair 602c, 602d, no other pile yarn (i.e. no pile yarn other than first pile yarn 608a) is interposed between first ground warp yarn pair 602a, 602b and second ground warp yarn pair 602c, 602d.

[0053] The invention embodiments described above relate to terry fabrics having a repeating ground weave sequence comprising 3 ground weft yarns positioned within a first shed formed by a ground warp yarn pair, followed by one ground weft yarn positioned within a second shed formed by the ground warp yarn pair, wherein the first shed and second shed may be adjacent to each

other. It would be understood that one or both of the first shed and the second shed may have a larger number of ground weft yarns positioned therein. Figures 9 to 14 illustrate exemplary embodiments of such type.

[0054] Figures 9 and 10 respectively illustrate first and second interlacing arrangements that are incorporated within an alternate terry weave sequence, in accordance with the present invention. Figure 9 illustrates a first interlacing arrangement, Figure 10 illustrates a second interlacing arrangement. Figure 11 illustrates the terry weave sequence incorporating both the first interlacing arrangement and the second interlacing arrangement.

[0055] Figure 9 illustrates a first interlacing arrangement 900A comprising a first ground warp yarn pair 902a, 902b, a first pile warp yarn 908a, and a plurality of ground weft yarns 904a to 904k. The first ground warp yarn pair comprises warp yarns 902a and 902b that are interlaced and positioned adjacent to first pile warp yarn 908a. The first ground warp yarn pair 902a, 902b is interlaced with ground weft yarns such that first weft yarn 904a, second weft yarn 904b and third weft yarn 904c are positioned within a first shed 906a formed by first ground warp yarn pair 902a and 902b. Additionally, a fourth weft yarn 904d is positioned within a second shed 906b formed by first ground warp yarn pair 902a and 902b. A fifth weft yarn 904e, sixth weft yarn 904f and seventh weft yarn 904g are positioned within a third shed 906c formed by first ground warp yarn pair 902a and 902b. Additionally, an eighth weft yarn 904h is positioned within a fourth shed 906d formed by first ground warp yarn pair 902a and 902b. Eighth weft yarn 904h is followed by immediately adjacent weft yarn 904i. Yet further, second weft yarn 904b and third weft yarn 904c have an additional weft yarn 904j interposed therebetween, which additional weft yarn 904j is positioned within first shed 906a formed by first ground warp yarn pair 902a and 902b. Sixth weft yarn 904f and seventh weft yarn 904g also have an additional weft yarn 904k interposed therebetween, which additional weft yarn 904k is positioned within third shed 906c formed by first ground warp yarn pair 902a and 902b.

[0056] First pile warp yarn 908a is interlaced within first interlacing arrangement 900A so as to form a first pile loop 910a and a second pile loop 910b. First pile loop 910a is formed over first weft yarn 904a, second weft yarn 904b, additional weft yarn 904j, third weft yarn 904c and fourth weft yarn 904d. More specifically first pile loop 910a is formed by passing first pile warp yarn 908a (i) between first weft yarn 904a and second weft yarn 904b, (ii) over second weft yarn 904b, additional weft yarn 904j and third weft yarn 904c in a loop (formed on a top surface / face surface of the ground substrate), (iii) between third weft yarn 904c and fourth weft yarn 904d, and (iv) between fourth weft yarn 904d and fifth weft yarn 904e. Likewise, second pile loop 910b is formed over fifth weft yarn 904e, sixth weft yarn 904f, additional weft yarn 904k, seventh weft yarn 904g and eighth weft yarn 904h. Specifically, second pile loop 910b is formed by passing first

pile warp yarn 908a (i) between fifth weft yarn 904e and sixth weft yarn 904f, (ii) over sixth weft yarn 904f, additional weft yarn 904k, and seventh weft yarn 904g in a loop (formed on a bottom surface / back surface of the ground substrate), (iii) between seventh weft yarn 904g and eighth weft yarn 904h, and (iv) between eighth weft yarn 904h and ninth weft yarn 904i.

[0057] Figure 10 illustrates a second interlacing arrangement 900B comprising a second ground warp yarn pair 902c, 902d, and a second pile warp yarn 908b, respectively interlaced through ground weft yarns 904a to 904k. The second ground warp yarn pair comprises warp yarns 902c and 902d that are interlaced and positioned adjacent to second pile warp yarn 908b. The second ground warp yarn pair 902c, 902d is interlaced with ground weft yarns such that first weft yarn 904a, second weft yarn 904b and third weft yarn 904c are positioned within a fifth shed 906e formed by second ground warp yarn pair 902c and 902d. Fourth weft yarn 904d is positioned within a sixth shed 906f formed by second ground warp yarn pair 902c and 902d. Fifth weft yarn 904e, sixth weft yarn 904f and seventh weft yarn 904g are positioned within a seventh shed 906g formed by second ground warp yarn pair 902c and 902d. Eighth weft yarn 904h is positioned within an eighth shed 906h formed by second ground warp yarn pair 902c and 902d. Additional weft yarn 904j (which is interposed between second weft yarn 904b and third weft yarn 904c) is positioned within fifth shed 906e formed by second ground warp yarn pair 902c and 902d. Additional weft yarn 904k (which is interposed between sixth weft yarn 904f and seventh weft yarn 904g) is positioned within seventh shed 906g formed by second ground warp yarn pair 902c and 902d.

[0058] Second pile warp yarn 908b is interlaced within second interlacing arrangement 900B so as to form a third pile loop 910c and a fourth pile loop 910d. Third pile loop 910c is formed over first weft yarn 904a, second weft yarn 904b, additional weft yarn 904j, third weft yarn 904c and fourth weft yarn 904d. More specifically, third pile loop 910c is formed by passing second pile warp yarn 908b (i) between first weft yarn 904a and second weft yarn 904b, (ii) over second weft yarn 904b, additional weft yarn 904j, and third weft yarn 904c in a loop (formed on a bottom surface / back surface of the ground substrate), (iii) between third weft yarn 904c and fourth weft yarn 904d and (iv) between fourth weft yarn 904d and fifth weft yarn 904e. Likewise, fourth pile loop 910d is formed over fifth weft yarn 904e, sixth weft yarn 904f, additional weft yarn 904k, seventh weft yarn 904g and eighth weft yarn 904h. Specifically, fourth pile loop 910d is formed by passing second pile warp yarn 908b(i) between fifth weft yarn 904e and sixth weft yarn 904f, (ii) over sixth weft yarn 904f, additional weft yarn 904k and seventh weft yarn 904g in a loop (formed on a top surface / face surface of the ground substrate), (iii) between seventh weft yarn 904g and eighth weft yarn 904h and (iv) between eighth weft yarn 904h and a ninth weft yarn 904i.

[0059] Figure 11 illustrates a terry weave sequence

1100 in accordance with the present invention, wherein, first interlacing arrangement 900A (as illustrated in Figure 9) and second interlacing arrangement 900B (as illustrated in Figure 10) are incorporated within terry weave sequence 1100.

[0060] As illustrated in Figure 11, first pile loop 910a is formed on a face surface of the ground substrate. Simultaneously the opposite surface (i.e. the back surface) of the ground substrate comprises a first region having boundaries defined by (a) first ground warp yarn pair 902a, 902b, (b) second ground warp yarn pair 902c, 902d, (c) first weft yarn 904a and (d) fourth weft yarn 904d - which first region is devoid or free of pile loop formation (i.e. no pile loop is formed over this region on said back surface of the ground substrate).

[0061] Likewise, second pile loop 910b is formed on a back surface of the ground substrate. Simultaneously an opposite surface (i.e. the face surface) of the ground substrate comprises a second region having boundaries defined by (a) first ground warp yarn pair 902a, 902b, (b) second ground warp yarn pair 902c, 902d, (c) fifth weft yarn 904e and (d) eighth weft yarn 904h - which second region is devoid or free of pile loop formation (i.e. no pile loop is provided in this region on said face surface of the ground substrate).

[0062] Additionally, as illustrated in Figure 11, third pile loop 910c is formed on a back surface of the ground substrate. Simultaneously an opposite surface of the ground substrate (i.e. the face surface) comprises a third region having boundaries defined by (a) second ground warp yarn pair 902c, 902d, (b) a third ground warp yarn pair (not shown in Figure 11) that is adjacent to second ground warp yarn pair 902c, 902d, and which is positioned such that second ground warp yarn pair 902c, 902d is interposed between said third ground warp yarn pair and first ground warp yarn pair 902a, 902b, (c) first weft yarn 904a and (d) fourth weft yarn 904d - which third region is devoid or free of pile loop formation (i.e. no pile loop is formed over this region on the face surface of the ground substrate).

[0063] Likewise, fourth pile loop 910d is formed on a face surface of the ground substrate. Simultaneously an opposite surface (i.e. the back surface) of the ground substrate comprises a fourth region having boundaries defined by (a) second ground warp yarn pair 902c, 902d, (b) the third ground warp yarn pair, (c) fifth weft yarn 904e and (d) eighth weft yarn 904h - which fourth region is devoid or free of pile loop formation (i.e. no pile loop is formed over this region on back surface of the ground substrate).

[0064] As is apparent from weave sequence 1100 as illustrated in Figure 11, first pile loop 910a and third pile loop 910c are respectively formed on opposite surfaces of the ground substrate, while second pile loop 910b and fourth pile loop 910d are respectively formed on opposite surfaces of the ground substrate.

[0065] The terry weave sequence 1100 illustrated in Figure 11 shows first ground warp yarn pair 902a, 902b

positioned adjacent to second ground warp yarn pair 902c, 902d with only first pile yarn 908a interposed therebetween. For the purposes of the embodiment under discussion however, one or more additional ground warp yarn pairs may be interposed between first ground warp yarn pair 902a, 902b and second ground warp yarn pair 902c, 902d - provided however in a specific embodiment, no other pile yarn (i.e. no pile yarn other than first pile yarn 908a) is interposed between first ground warp yarn pair 902a, 902b and second ground warp yarn pair 902c, 902d.

[0066] The illustrations in Figures 9 to 11 illustrate embodiments of the terry weave sequence where first pile yarn 908a forms pile loops alternately on face and back surfaces of the ground substrate, while second pile yarn 908b also forms pile loops alternately on face and back surfaces of the ground substrate. In another embodiment of the invention, illustrated in Figures 12, 13 and 14, the first pile yarn may form pile loops on only one of the face or back surface of the ground substrate while the second pile yarn may form pile loops on only the other of the face or back surface of the ground substrate.

[0067] Figures 12 and 13 respectively illustrate first and second interlacing arrangements that are incorporated within a second embodiment of a terry weave sequence in accordance with the present invention. Figure 12 illustrates a first interlacing arrangement, Figure 13 illustrates a second interlacing arrangement. Figure 14 illustrates an embodiment of the terry weave sequence incorporating both of said first interlacing arrangement and the second interlacing arrangement.

[0068] Figure 12 illustrates a first interlacing arrangement 1200A comprising a first ground warp yarn pair 1202a, 1202b, a first pile warp yarn 1208a, and a plurality of ground weft yarns 1204a to 1204k. The first ground warp yarn pair comprises warp yarns 1202a and 1202b that are interlaced and positioned adjacent to first pile warp yarn 1208a. The first ground warp yarn pair 1202a, 1202b is interlaced with ground weft yarns such that first weft yarn 1204a, second weft yarn 1204b and third weft yarn 1204c are positioned within a first shed 1206a formed by first ground warp yarn pair 1202a and 1202b. Additionally, a fourth weft yarn 1204d is positioned within a second shed 1206b formed by first ground warp yarn pair 1202a and 1202b. A fifth weft yarn 1204e, sixth weft yarn 1204f and seventh weft yarn 1204g are positioned within a third shed 1206c formed by first ground warp yarn pair 1202a and 1202b.

[0069] Additionally, an eighth weft yarn 1204h is positioned within a fourth shed 1206d formed by first ground warp yarn pair 1202a and 1202b. Eighth weft yarn 1204h is followed by immediately adjacent weft yarn 1204i. Yet further, second weft yarn 1204b and third weft yarn 1204c have an additional weft yarn 1204j interposed therebetween, which additional weft yarn 1204j is positioned within first shed 1206a formed by ground warp yarn pair 1202a and 1202b. Sixth weft yarn 1204f and seventh weft yarn 1204g also have an additional weft yarn 1204k

interposed therebetween, which additional weft yarn 1204k is positioned within third shed 1206c formed by ground warp yarn pair 1202a and 1202b.

[0070] First pile warp yarn 1208a is interlaced within first interlacing arrangement 1200A so as to form a first pile loop 1210a and a second pile loop 1210b. First pile loop 1210a is formed over first weft yarn 1204a, second weft yarn 1204b, additional weft yarn 1204j, third weft yarn 1204c and fourth weft yarn 1204d. More specifically, first pile loop 1210a is formed by passing first pile warp yarn 1208a (i) between first weft yarn 1204a and second weft yarn 1204b, (ii) over second weft yarn 1204b, additional weft yarn 1204j, and third weft yarn 1204c in a loop (formed on a top surface / face surface of the ground substrate), (iii) between third weft yarn 1204c and fourth weft yarn 1204d, and (iv) beneath fourth weft yarn 1204d and fifth weft yarn 1204e. Likewise, second pile loop 1210b is formed over fifth weft yarn 1204e, sixth weft yarn 1204f, additional weft yarn 1204k, seventh weft yarn 1204g, and eighth weft yarn 1204h. Specifically, second pile loop 1210b is formed by passing first pile warp yarn 1208a (i) between fifth weft yarn 1204e and sixth weft yarn 1204f, (ii) over sixth weft yarn 1204f, additional weft yarn 1204k, and seventh weft yarn 1204g in a loop (formed on a top surface / face surface of the ground substrate), (iii) between seventh weft yarn 1204g and eighth weft yarn 1204h, and (iv) thereafter beneath eighth weft yarn 1204h and ninth weft yarn 1204i.

[0071] Figure 13 illustrates a second interlacing arrangement 1200B comprising a second ground warp yarn pair 1202c, 1202d, and a second pile warp yarn 1208b, respectively interlaced through ground weft yarns 1204a to 1204k. The second ground warp yarn pair comprises warp yarns 1202c and 1202d that are interlaced and positioned adjacent to second pile warp yarn 1208b. The second ground warp yarn pair 1202c, 1202d is interlaced with ground weft yarns such that first weft yarn 1204a, second weft yarn 1204b and third weft yarn 1204c are positioned within a fifth shed 1206e formed by second ground warp yarn pair 1202c and 1202d. Fourth weft yarn 1204d is positioned within a sixth shed 1206f formed by second ground warp yarn pair 1202c and 1202d. Fifth weft yarn 1204e, sixth weft yarn 1204f and seventh weft yarn 1204g are positioned within a seventh shed 1206g formed by second ground warp yarn pair 1202c and 1202d. Eighth weft yarn 1204h is positioned within an eighth shed 1206h formed by second ground warp yarn pair 1202c and 1202d. Additional weft yarn 1204j (which is interposed between second weft yarn 1204b and third weft yarn 1204c) is positioned within fifth shed 1206e formed by second ground warp yarn pair 1202c and 1202d. Additional weft yarn 1204k (which is interposed between sixth weft yarn 1204f and seventh weft yarn 1204g) is positioned within seventh shed 1206g formed by second ground warp yarn pair 1202c and 1202d.

[0072] Second pile warp yarn 1208b is interlaced within second interlacing arrangement 1200B so as to form a third pile loop 1210c and a fourth pile loop 1210d. Third

pile loop 1210c is formed over first weft yarn 1204a, second weft yarn 1204b, additional weft yarn 1204j, third weft yarn 1204c and fourth weft yarn 1204d. More specifically, third pile loop 1210c is formed by passing second pile warp yarn 1208b(i) between first weft yarn 1204a and second weft yarn 1204b, (ii) over second weft yarn 1204b, additional weft yarn 1204j, and third weft yarn 1204c in a loop (formed on a bottom surface / back surface of the ground substrate), (iii) between third weft yarn 1204c and fourth weft yarn 1204d and (iv) and over fourth weft yarn 1204d and fifth weft yarn 1204e. Likewise, fourth pile loop 1210d is formed over fifth weft yarn 1204e, sixth weft yarn 1204f, additional weft yarn 1204k, seventh weft yarn 1204g and eighth weft yarn 1204h. Specifically, fourth pile loop 1210d is formed by passing second pile warp yarn 1208b(i) between fifth weft yarn 1204e and sixth weft yarn 1204f, (ii) over sixth weft yarn 1204f, additional weft yarn 1204k, and seventh weft yarn 1204g in a loop (formed on a bottom surface / back surface of the ground substrate), (iii) between seventh weft yarn 1204g and eighth weft yarn 1204h and (iv) over eighth weft yarn 1204h and a ninth weft yarn 1204i.

[0073] Figure 14 illustrates a terry weave sequence 1400 in accordance with the present invention, wherein, first interlacing arrangement 1200A (as illustrated in Figure 12) and second interlacing arrangement 1200B (as illustrated in Figure 13) are incorporated within terry weave sequence 1400.

[0074] As illustrated in Figure 14, first pile loop 1210a is formed on a face surface of the ground substrate (i.e. the ground fabric comprising interwoven warp and weft yarns). Simultaneously the opposite surface (i.e. the back surface) of the ground substrate comprises a first region having boundaries defined by (a) first ground warp yarn pair 1202a, 1202b, (b) second ground warp yarn pair 1202c, 1202d, (c) first weft yarn 1204a and (d) fourth weft yarn 1204d - which first region is devoid or free of pile loop formation (i.e. no pile loop is formed over this region on said back surface of the ground substrate).

[0075] Likewise, second pile loop 1210b is formed on a face surface of the ground substrate. Simultaneously an opposite surface (i.e. the back surface) of the ground substrate comprises a second region having boundaries defined by (a) first ground warp yarn pair 1202c, 1202d, (b) second ground warp yarn pair 1202c, 1202d, (c) fifth weft yarn 1204e and (d) eighth weft yarn 1204h - which second region is devoid or free of pile loop formation (i.e. no pile loop is provided in this region on said back surface of the ground substrate).

[0076] Additionally, as illustrated in Figure 14, third pile loop 1210c is formed on a back surface of the ground substrate. Simultaneously an opposite surface of the ground substrate (i.e. the face surface) comprises a third region having boundaries defined by (a) second ground warp yarn pair 1202c, 1202d, (b) a third ground warp yarn pair (not shown in Figure 14) that is adjacent to second ground warp yarn pair 1202c, 1202d, and which is positioned such that second ground warp yarn pair

1202c, 1202d is interposed between said third ground warp yarn pair and first ground warp yarn pair 1202a, 1202b, (c) first weft yarn 1204a and (d) fourth weft yarn 1204d - which third region is devoid or free of pile loop formation (i.e. no pile loop is formed over this region on the face surface of the ground substrate).

[0077] Likewise, fourth pile loop 1210d is formed on a back surface of the ground substrate. Simultaneously an opposite surface (i.e. the face surface) of the ground substrate comprises a fourth region having boundaries defined by (a) second ground warp yarn pair 1202a, 1202b, (b) the third ground warp yarn pair, (c) fifth weft yarn 1204e and (d) eighth weft yarn 1204h - which fourth region is devoid or free of pile loop formation (i.e. no pile loop is formed over this region on the face surface of the ground substrate).

[0078] Additionally, as is apparent from weave sequence 1400 as illustrated in Figure 14, first pile loop 1210a and third pile loop 1210c are respectively formed on opposite surfaces of the ground substrate, while second pile loop 1210b and fourth pile loop 1210d are respectively formed on opposite surfaces of the ground substrate.

[0079] The terry weave sequence 1400 illustrated in Figure 14 shows first ground warp yarn pair 1202a, 1202b positioned adjacent to second ground warp yarn pair 1202c, 1202d with only first pile yarn 1208a interposed therebetween. For the purposes of the present invention however, one or more additional ground warp yarn pairs may be interposed between first ground warp yarn pair 1202a, 1202b and second ground warp yarn pair 1202c, 1202d. In an embodiment of the invention, while one or more additional ground warp yarn pairs may be interposed between first ground warp yarn pair 1202a, 1202b and second ground warp yarn pair 1202c, 1202d, no other pile yarn (i.e. no pile yarn other than first pile yarn 1208a) is interposed between first ground warp yarn pair 1202a, 1202b and second ground warp yarn pair 1202c, 1202d.

[0080] The present invention additionally provides terry weaves fabrics which comprise one or more instances of the terry weave sequences described above in connection with Figures 3 to 14. An embodiment of the invention comprises a terry weave fabric having at least two and preferably more than two instances of the repeating terry weave sequences as described above.

[0081] In an embodiment of the terry fabric of the present invention, the terry weave sequence ensures positioning the second shed adjacent to the first shed, positioning the third shed adjacent to the second shed, positioning the fourth shed adjacent to the third shed, positioning the sixth shed adjacent to the fifth shed, positioning the seventh shed adjacent to the sixth shed and / or positioning the eighth shed adjacent to the seventh shed.

[0082] The repeated weave sequence may alternately ensure that at least one additional weft yarn is positioned between any of the second shed and the first shed, the

third shed and the second shed, the fourth shed and the third shed, the sixth shed and the fifth shed, the seventh shed and the sixth shed and / or the eighth shed and the seventh shed.

[0083] In an embodiment of the invention, any of the first shed, third shed, fifth shed or seventh shed may have more than three weft yarns positioned therewithin. Likewise, any one of the second shed, fourth shed, sixth shed or eighth shed may have more than one weft yarn positioned therewithin.

[0084] It would be understood that the first ground warp yarn pair and the second ground warp yarn pair may be adjacent yarn pairs, having only a single pile yarn interposed therebetween. The first ground warp yarn pair and the second ground warp yarn pair may alternately have at least one additional ground warp yarn pair interposed therebetween. In an embodiment, the first pile warp yarn and the second pile warp yarn may be adjacent pile warp yarns.

[0085] In weaving a terry fabric, a plurality of instances of the terry weave sequences described above may be implemented within the terry fabric. In an embodiment, a first instance of the terry weave sequence may be located immediately adjacent to a second instance of the terry weave sequence. In another embodiment, the first pile yarn or the second pile yarn may be interlaced into the ground substrate in a repeating sequence that forms each pile loop over 4 or more weft yarns.

[0086] The invention additionally provides methods of weaving a terry fabric, the method comprising repeating at least one of the terry weave sequences described above in a plurality of instances while weaving a terry fabric.

[0087] A particular method embodiment of the present invention comprises a method of manufacturing a terry fabric comprising a plurality of longitudinally oriented ground warp yarns pairs, a plurality of longitudinally oriented pile warp yarns, and a plurality of weft yarns oriented substantially perpendicular to the ground warp yarn pairs. The method comprises weaving a terry fabric using a plurality of instances of a repeated weave sequence.

[0088] Weaving each repeated weave sequence includes weaving a first interlacing arrangement comprising a first ground warp yarn pair and a first pile warp yarn interlaced adjacent to and in contact with at least one yarn within the first ground warp yarn pair, and comprising the steps of (i) placement of first, second and third weft yarns within a first shed formed by the first ground warp yarn pair, (ii) placement of a fourth weft yarn within a second shed formed by the first ground warp yarn pair, wherein the second and third weft yarns are positioned between the first and fourth weft yarns, (iii) placement of fifth, sixth and seventh weft yarns within a third shed formed by the first ground warp yarn pair, (iv) placement of an eighth weft yarn within a fourth shed formed by the first ground warp yarn pair, wherein the sixth and seventh weft yarns are positioned between the fifth and eighth

weft yarns, (v) forming a first pile loop, wherein said first pile loop is formed with the first pile yarn, and wherein said first pile loop is formed over the first, second, third and fourth weft yarns, on one of a face surface or a back surface of a ground substrate, (vi) forming a first region on a surface of the ground substrate that is opposite to the surface on which the first pile loop is formed, said first region having boundaries defined by (a) the first ground warp yarn pair, (b) a second ground warp yarn pair adjacent to the first ground warp yarn pair, (c) the first weft yarn and (d) the fourth weft yarn, wherein said first region is free of pile loop formation, (vii) forming a second pile loop, wherein said second pile loop is formed by the first pile yarn, and wherein said second pile loop is formed over the fifth, sixth, seventh and eighth weft yarns, on one of the face surface or the back surface of the ground substrate, (viii) forming a second region on a surface of the ground substrate that is opposite to the surface on which the second pile loop is formed, said second region having boundaries defined by (a) the first ground warp yarn pair, (b) the second ground warp yarn pair, (c) the fifth weft yarn and (d) the eighth weft yarn, wherein said second region is free of pile loop formation.

[0089] Weaving each repeated weave sequence additionally includes weaving a second interlacing arrangement comprising the second ground warp yarn pair and a second pile warp yarn interlaced adjacent to and in contact with at least one yarn within the second ground warp yarn pair, and comprising the steps of (i) placement of the first, second and third weft yarns within a fifth shed formed by the second ground warp yarn pair, (ii) placement of the fourth weft yarn within a sixth shed formed by the second ground warp yarn pair, (iii) placement of the fifth, sixth and seventh weft yarns within a seventh shed formed by the second ground warp yarn pair, (iv) the eighth weft yarn positioned within an eighth shed formed by the second ground warp yarn pair, (v) forming a third pile loop, wherein said third pile loop is formed by the second pile yarn, and wherein said third pile loop is formed over the first, second, third and fourth weft yarns, on one of the face surface or the back surface of the ground substrate, (vi) forming a third region on a surface of the ground substrate that is opposite to the surface on which the third pile loop is formed, said third region having boundaries defined by (a) the second ground warp yarn pair, (b) a third ground warp yarn pair adjacent to the second ground warp yarn pair and positioned such that the second ground warp yarn pair is interposed between the third ground warp yarn pair and the first ground warp yarn pair, (c) the first weft yarn and (d) the fourth weft yarn, wherein said third region is free of pile loop formation, (vii) forming a fourth pile loop, wherein said fourth pile loop is formed by the second pile yarn, and wherein said fourth pile loop is formed over the fifth, sixth, seventh and eighth weft yarns on one of the face surface or the back surface of the ground substrate, (viii) forming a fourth region on a surface of the ground substrate that is opposite to the surface on which the fourth pile loop is

formed, said fourth region having boundaries defined by (a) the second ground warp yarn pair, (b) the third ground warp yarn pair, (c) the fifth weft yarn and (d) the eighth weft yarn, wherein said fourth region is free of pile loop formation.

[0090] Weaving each repeated weave sequence includes ensuring that (i) one of the first pile loop and the third pile loop is formed on the face surface of the ground substrate, and the other of the first pile loop and the third pile loop is formed on the back surface of the ground substrate, and (ii) one of the second pile loop and the fourth pile loop is formed on the face surface of the ground substrate, and the other of the first pile loop and the third pile loop is formed on the back surface of the ground substrate.

[0091] In an embodiment of the invention, the method of manufacturing the terry fabric additionally comprises shearing one or more of the first pile loop, second pile loop, third pile loop and / or fourth pile loop, to generate cut tufted pile tuft on at least one surface of the ground substrate.

[0092] The terry weave sequences and terry weave fabrics in accordance with the above embodiments of the invention have been found to present several significant advantages.

[0093] Table A in Figure 16 sets out results of comparative product testing using terry fabrics manufactured in accordance with embodiments of the present invention, in comparison with terry fabrics manufactured in accordance with terry weave sequences known in the prior art.

[0094] Terry fabric A corresponds to a fabric of the kind discussed in connection with Figures 3 to 8, whereas terry fabric E corresponds to a fabric of the kind discussed in connection with Figures 9 to 14. As will be observed, for a given grams per square meter (GSM) value, terry fabrics manufactured in accordance with the present invention exhibit significantly higher pick density, and cover factor (weft). Terry fabric A additionally exhibits absorbency that is comparable to prior art towels despite having a significantly lower loop density. Lower loop density has been found to significantly improve fabric softness of the resulting terry fabric. It would also be observed that terry fabrics A and E use significantly less pile yarn per inch, while offering absorbency that is comparable to prior art terry fabrics - which in presents significant cost and manufacturing efficiencies, particularly since pile yarn is typically more expensive than ground warp and weft yarns. In cases where pile yarn is manufactured using soluble fibers such as polyvinyl alcohol (PVA) fibers, lowering the pile per inch value also offers environmental advantages. Yet further, as is apparent from the data in Table A, terry fabrics manufactured in accordance with the present invention exhibit significantly improved tensile strength.

[0095] In addition to the above, terry fabrics manufactured in accordance with teachings of the present invention have been found to have a distinctive and aesthetically appealing appearance and improved uniformity of

texture in comparison with terry fabrics manufactured in accordance with terry weaves known in the prior art. Figure 15B provides a photograph depicting appearance of a terry fabric manufactured in accordance with teachings of the present invention - which appearance is significantly different and aesthetically improved over the terry fabric photographs in Figure 15A, which corresponds to a terry fabric manufactured in accordance with prior art methods.

[0096] The terry fabrics in accordance with the present invention may be manufactured using one or more non-soluble yarns and optionally one or more soluble yarns. Non-soluble yarns for manufacturing terry fabrics in accordance with teachings of the present invention may comprise any one or more natural fibers such as cotton, wool, silk, jute, flax, bamboo or ramie, or one or more regenerated / synthetic fibres such as lyocell, viscose, modal, soya, polyester, acrylic, rayon, charcoal, linen, corn, milk fibre, PLA (poly lactic acid) fibre etc. Soluble yarns for manufacturing ply yarns (or for that matter ground yarns) may include any of polyvinyl alcohol (PVA), wool or a yarn product that is sold under the trade name "solucell".

[0097] It would be understood that the examples and embodiment discussed anywhere in the present specification are illustrative only. Those skilled in the art would immediately appreciate that various modifications in form and detail may be made without departing from or offending the spirit and scope of the invention as defined by the appended claims.

Claims

1. A terry fabric comprising a plurality of longitudinally oriented ground warp yarns pairs, a plurality of longitudinally oriented pile warp yarns, and a plurality of weft yarns oriented substantially perpendicular to the ground warp yarn pairs, the terry fabric comprising a repeated weave sequence, said repeated weave sequence comprising:

a first interlacing arrangement comprising a first ground warp yarn pair and a first pile warp yarn interlaced adjacent to and in contact with at least one yarn within the first ground warp yarn pair, the first interlacing arrangement comprising:

first, second and third weft yarns positioned within a first shed formed by the first ground warp yarn pair;

a fourth weft yarn positioned within a second shed formed by the first ground warp yarn pair, wherein the second and third weft yarns are positioned between the first and fourth weft yarns;

fifth, sixth and seventh weft yarns positioned within a third shed formed by the first

ground warp yarn pair;
 an eighth weft yarn positioned within a fourth shed formed by the first ground warp yarn pair, wherein the sixth and seventh weft yarns are positioned between the fifth and eighth weft yarns; 5
 a first pile loop formed by the first pile yarn, wherein said first pile loop is formed over the first, second, third and fourth weft yarns on one of a face surface or a back surface of a ground substrate; 10
 a first region on a surface of the ground substrate that is opposite to the surface on which the first pile loop is formed, said first region having boundaries defined by (i) the first ground warp yarn pair, (ii) a second ground warp yarn pair adjacent to the first ground warp yarn pair, (iii) the first weft yarn and (iv) the fourth weft yarn, wherein said first region is free of pile loop formation; 15
 a second pile loop formed by the first pile yarn, wherein said second pile loop is formed over the fifth, sixth, seventh and eighth weft yarns on one of the face surface or the back surface of the ground substrate; 20
 a second region on a surface of the ground substrate that is opposite to the surface on which the second pile loop is formed, said second region having boundaries defined by (i) the first ground warp yarn pair, (ii) the second ground warp yarn pair, (iii) the fifth weft yarn and (iv) the eighth weft yarn, wherein said second region is free of pile loop formation; 25
 a second interlacing arrangement comprising the second ground warp yarn pair and a second pile warp yarn interlaced adjacent to and in contact with at least one yarn within the second ground warp yarn pair, the second interlacing arrangement comprising: 30

the first, second and third weft yarns positioned within a fifth shed formed by the second ground warp yarn pair; 35
 the fourth weft yarn positioned within a sixth shed formed by the second ground warp yarn pair;
 the fifth, sixth and seventh weft yarns positioned within a seventh shed formed by the second ground warp yarn pair; 40
 the eighth weft yarn positioned within an eighth shed formed by the second ground warp yarn pair;
 a third pile loop formed by the second pile yarn, wherein said third pile loop is formed over the first, second, third and fourth weft yarns on one of the face surface or the back 45

surface of the ground substrate;
 a third region on a surface of the ground substrate that is opposite to the surface on which the third pile loop is formed, said third region having boundaries defined by (i) the second ground warp yarn pair, (ii) a third ground warp yarn pair adjacent to the second ground warp yarn pair and positioned such that the second ground warp yarn pair is interposed between the third ground warp yarn pair and the first ground warp yarn pair, (iii) the first weft yarn and (iv) the fourth weft yarn, wherein said third region is free of pile loop formation;
 a fourth pile loop formed by the second pile yarn, wherein said fourth pile loop is formed over the fifth, sixth, seventh and eighth weft yarns on one of the face surface or the back surface of the ground substrate;
 a fourth region on a surface of the ground substrate that is opposite to the surface on which the fourth pile loop is formed, said fourth region having boundaries defined by (i) the second ground warp yarn pair, (ii) the third ground warp yarn pair, (iii) the fifth weft yarn and (iv) the eighth weft yarn, wherein said fourth region is free of pile loop formation; 25

wherein:

one of the first pile loop and the third pile loop is formed on the face surface of the ground substrate, and the other of the first pile loop and the third pile loop is formed on the back surface of the ground substrate; and
 one of the second pile loop and the fourth pile loop is formed on the face surface of the ground substrate, and the other of the second pile loop and the fourth pile loop is formed on the back surface of the ground substrate. 30

2. The terry fabric as claimed in claim 1, wherein the repeated weave sequence ensures one or more of: 45

positioning the second shed adjacent to the first shed;
 positioning the third shed adjacent to the second shed;
 positioning the fourth shed adjacent to the third shed;
 positioning the sixth shed adjacent to the fifth shed;
 positioning the seventh shed adjacent to the sixth shed; and
 positioning the eighth shed adjacent to the sev- 50

- enth shed.
3. The terry fabric as claimed in claim 1, wherein the repeated weave sequence ensures that at least one additional weft yarn is positioned between any of:
 - the second shed and the first shed;
 - the third shed and the second shed;
 - the fourth shed and the third shed;
 - the sixth shed and the fifth shed;
 - the seventh shed and the sixth shed; or
 - the eighth shed and the seventh shed.
 4. The terry fabric as claimed in claim 1, wherein any of the first shed, third shed, fifth shed or seventh shed includes more than three weft yarns positioned therewithin.
 5. The terry fabric as claimed in claim 1, wherein any one of the second shed, fourth shed, sixth shed or eighth shed includes more than one weft yarn positioned therewithin.
 6. The terry fabric as claimed in claim 1, wherein:
 - in the first interlacing arrangement, the first pile loop and the second pile loop are formed on opposite surfaces of the ground substrate; and
 - in the second interlacing arrangement, the third pile loop and the fourth pile loop are formed on opposite surfaces of the ground substrate.
 7. The terry fabric as claimed in claim 1, wherein:
 - in the first interlacing arrangement, the first pile loop and the second pile loop are formed on one of the face surface or the back surface of the ground substrate; and
 - in the second interlacing arrangement, the third pile loop and the fourth pile loop are formed on the other of the face surface or the back surface of the ground substrate.
 8. The terry fabric as claimed in claim 1, wherein the first ground warp yarn pair and the second ground warp yarn pair are adjacent yarn pairs, and having only a single pile yarn interposed therebetween.
 9. The terry fabric as claimed in claim 1, wherein the first ground warp yarn pair and the second ground warp yarn pair have at least one additional ground warp yarn pair interposed therebetween.
 10. The terry fabric as claimed in claim 1, wherein a plurality of instances of the repeated weave sequences are implemented within the terry fabric.
 11. The terry fabric as claimed in claim 1, wherein a first instance of the repeated weave sequence is located immediately adjacent to a second instance of the repeated weave sequence.
 12. The terry fabric as claimed in claim 1, where the first pile warp yarn and the second pile warp yarn are adjacent pile warp yarns.
 13. The terry fabric as claimed in claim 1, wherein the first pile yarn or the second pile yarn is interlaced into the ground substrate in a repeating sequence that forms each pile loop over 4 or more weft yarns.
 14. The terry fabric as claimed in claim 1, wherein the first pile yarn or the second pile yarn is interlaced into the ground substrate in a repeating sequence that forms each pile loop over 4 to 6 weft yarns.
 15. A method of manufacturing a terry fabric comprising a plurality of longitudinally oriented ground warp yarns pairs, a plurality of longitudinally oriented pile warp yarns, and a plurality of weft yarns oriented substantially perpendicular to the ground warp yarn pairs, the method comprising weaving a terry fabric using a plurality of instances of a repeated weave sequence, wherein weaving each repeated weave sequence comprises:
 - weaving a first interlacing arrangement comprising a first ground warp yarn pair and a first pile warp yarn interlaced adjacent to and in contact with at least one yarn within the first ground warp yarn pair, comprising the steps of:
 - placement of first, second and third weft yarns within a first shed formed by the first ground warp yarn pair;
 - placement of a fourth weft yarn within a second shed formed by the first ground warp yarn pair, wherein the second and third weft yarns are positioned between the first and fourth weft yarns;
 - placement of fifth, sixth and seventh weft yarns within a third shed formed by the first ground warp yarn pair;
 - placement of an eighth weft yarn within a fourth shed formed by the first ground warp yarn pair, wherein the sixth and seventh weft yarns are positioned between the fifth and eighth weft yarns;
 - forming a first pile loop, wherein said first pile loop is formed with the first pile yarn, and wherein said first pile loop is formed over the first, second, third and fourth weft yarns, on one of a face surface or a back surface of a ground substrate;
 - forming a first region on a surface of the ground substrate that is opposite to the sur-

face on which the first pile loop is formed, said first region having boundaries defined by (i) the first ground warp yarn pair, (ii) a second ground warp yarn pair adjacent to the first ground warp yarn pair, (iii) the first weft yarn and (iv) the fourth weft yarn, wherein said first region is free of pile loop formation;

forming a second pile loop, wherein said second pile loop is formed by the first pile yarn, and wherein said second pile loop is formed over the fifth, sixth, seventh and eighth weft yarns, on one of the face surface or the back surface of the ground substrate; forming a second region on a surface of the ground substrate that is opposite to the surface on which the second pile loop is formed, said second region having boundaries defined by (i) the first ground warp yarn pair, (ii) the second ground warp yarn pair, (iii) the fifth weft yarn and (iv) the eighth weft yarn, wherein said second region is free of pile loop formation;

weaving a second interlacing arrangement comprising the second ground warp yarn pair and a second pile warp yarn interlaced adjacent to and in contact with at least one yarn within the second ground warp yarn pair, comprising the steps of:

placement of the first, second and third weft yarns within a fifth shed formed by the second ground warp yarn pair;

placement of the fourth weft yarn within a sixth shed formed by the second ground warp yarn pair;

placement of the fifth, sixth and seventh weft yarns within a seventh shed formed by the second ground warp yarn pair;

the eighth weft yarn positioned within an eighth shed formed by the second ground warp yarn pair;

forming a third pile loop, wherein said third pile loop is formed by the second pile yarn, and wherein said third pile loop is formed over the first, second, third and fourth weft yarns, on one of the face surface or the back surface of the ground substrate;

forming a third region on a surface of the ground substrate that is opposite to the surface on which the third pile loop is formed, said third region having boundaries defined by (i) the second ground warp yarn pair, (ii) a third ground warp yarn pair adjacent to the second ground warp yarn pair and positioned such that the second ground warp yarn pair is interposed between the third

ground warp yarn pair and the first ground warp yarn pair, (iii) the first weft yarn and (iv) the fourth weft yarn, wherein said third region is free of pile loop formation;

forming a fourth pile loop, wherein said fourth pile loop formed by the second pile yarn, and wherein said fourth pile loop is formed over the fifth, sixth, seventh and eighth weft yarns on one of the face surface or the back surface of the ground substrate; forming a fourth region on a surface of the ground substrate that is opposite to the surface on which the fourth pile loop is formed, said fourth region having boundaries defined by (i) the second ground warp yarn pair, (ii) the third ground warp yarn pair, (iii) the fifth weft yarn and (iv) the eighth weft yarn, wherein said fourth region is free of pile loop formation;

wherein:

one of the first pile loop and the third pile loop is formed on the face surface of the ground substrate, and the other of the first pile loop and the third pile loop is formed on the back surface of the ground substrate; and

one of the second pile loop and the fourth pile loop is formed on the face surface of the ground substrate, and the other of the second pile loop and the fourth pile loop is formed on the back surface of the ground substrate.

16. The method as claimed in claim 15, comprising shearing one or more of the first pile loop, second pile loop, third pile loop and fourth pile loop, resulting in one or more cut pile tufts on at least one surface of the ground substrate.

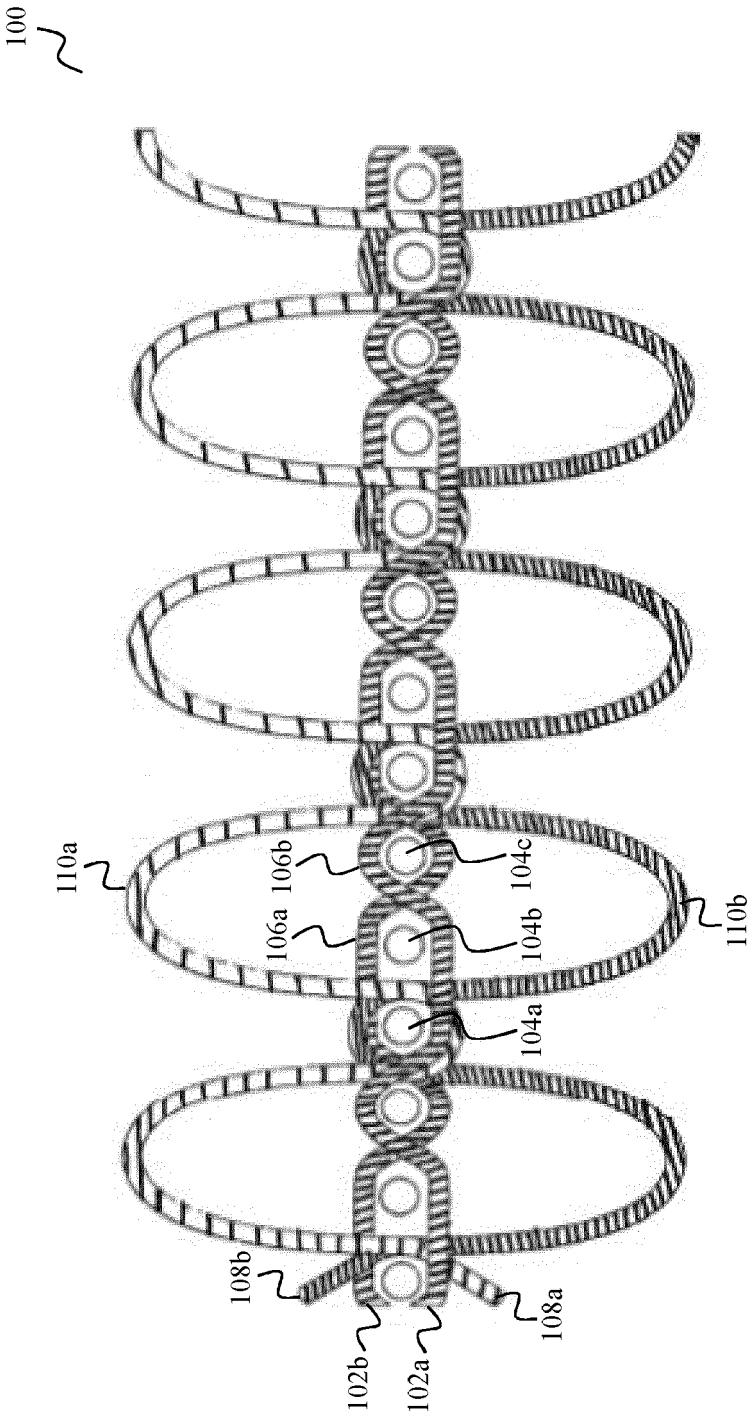


FIGURE 1

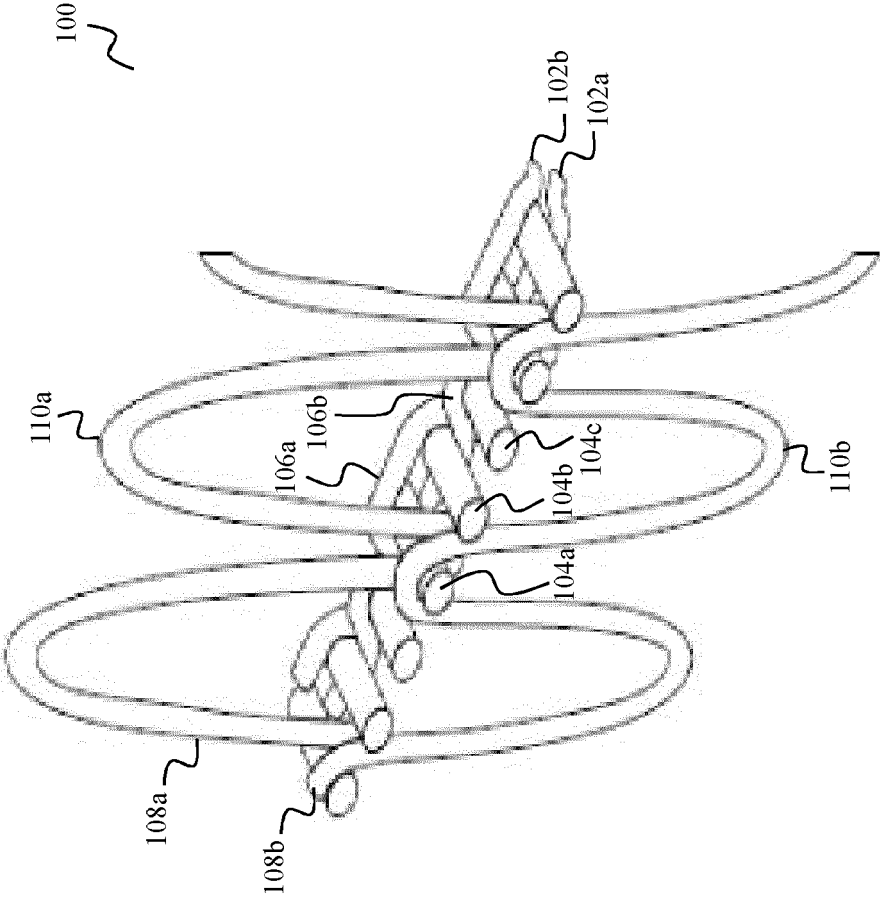


FIGURE 2

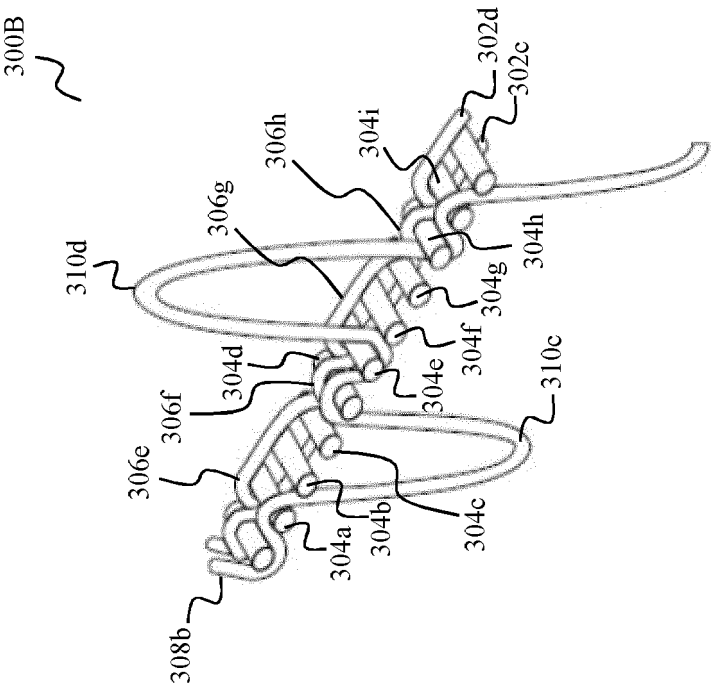


FIGURE 3

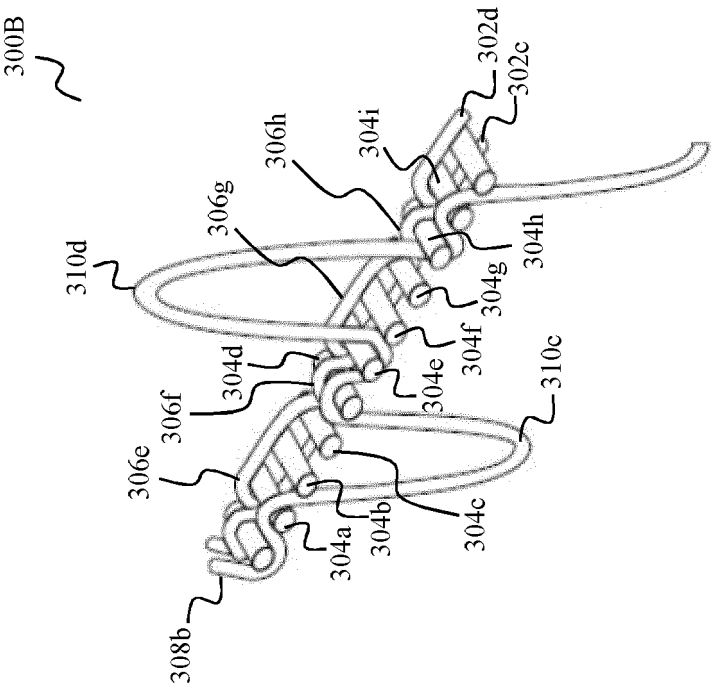


FIGURE 4

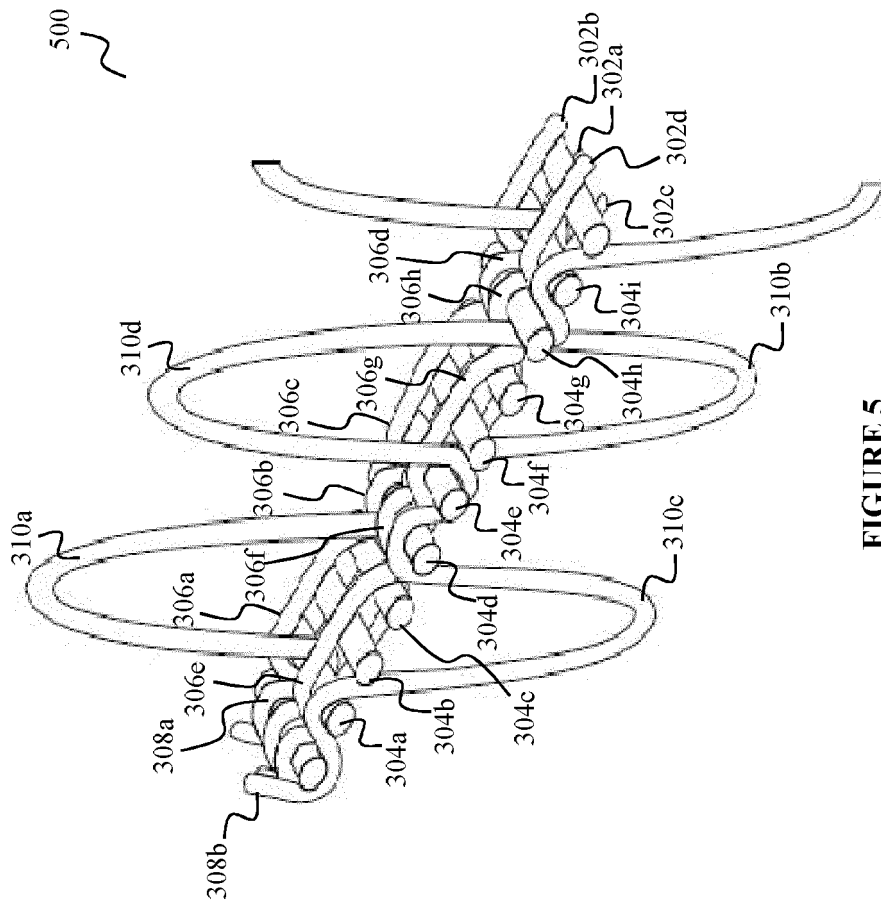


FIGURE 5

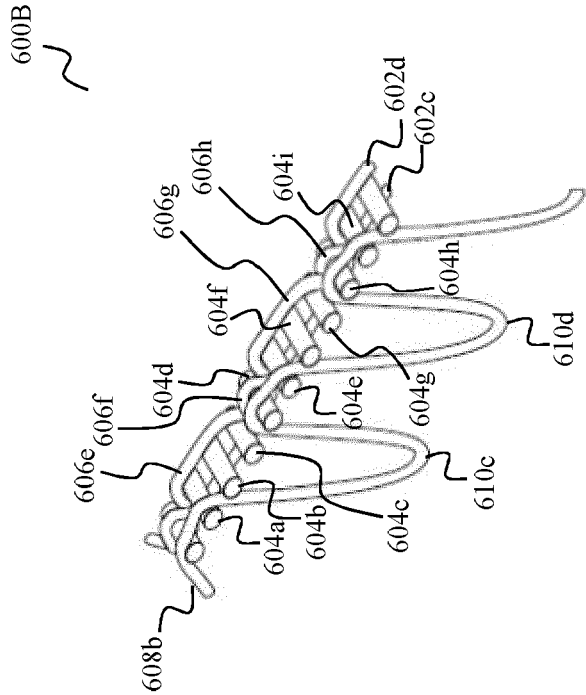


FIGURE 7

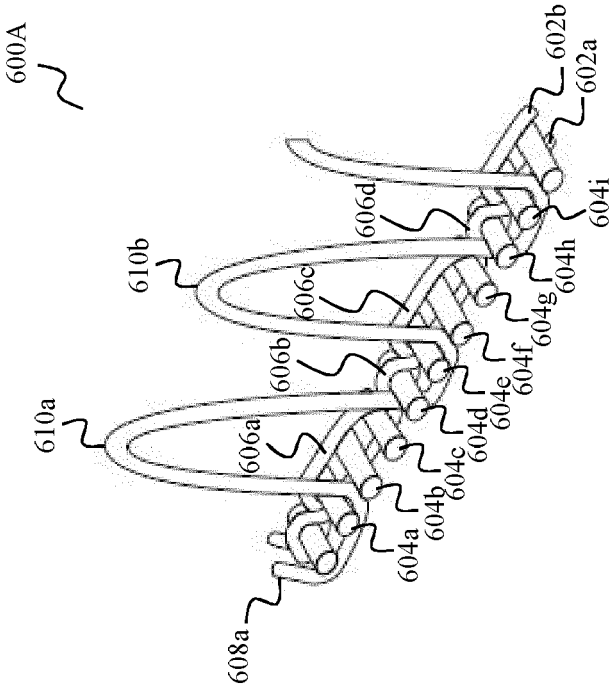


FIGURE 6

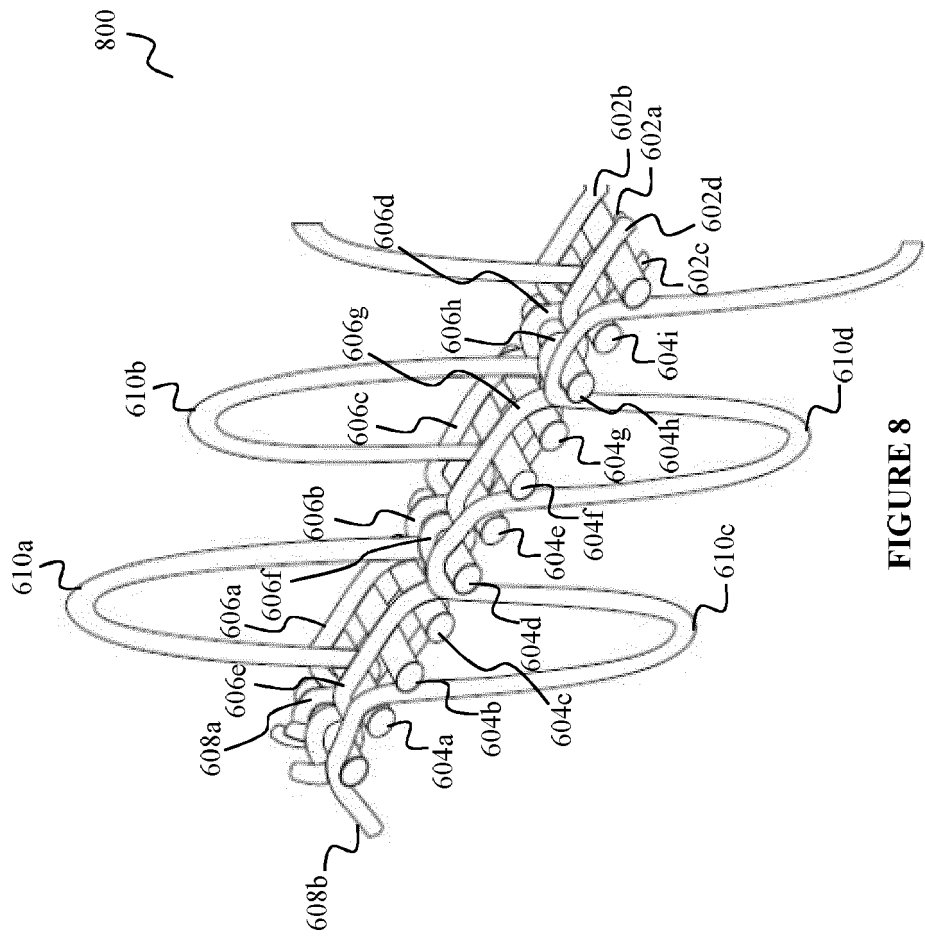


FIGURE 8

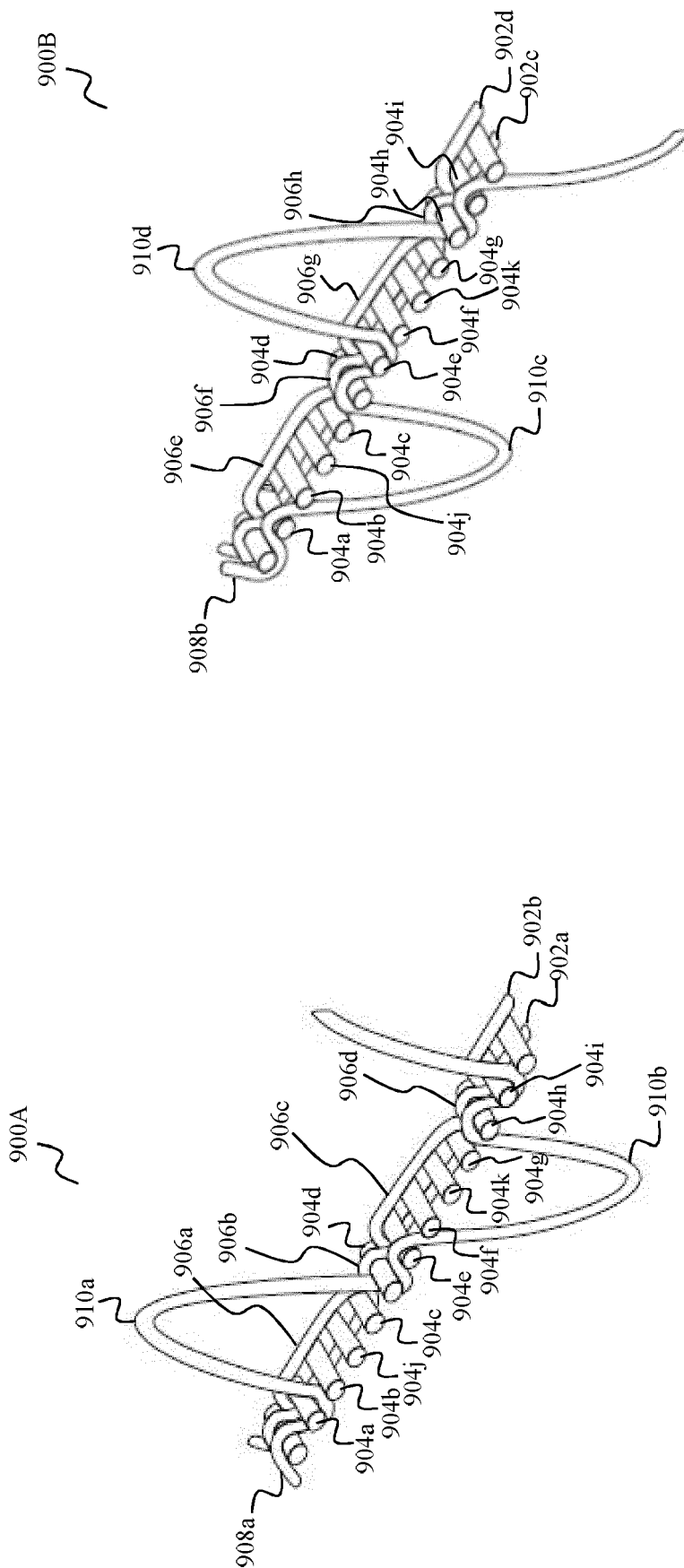


FIGURE 10

FIGURE 9

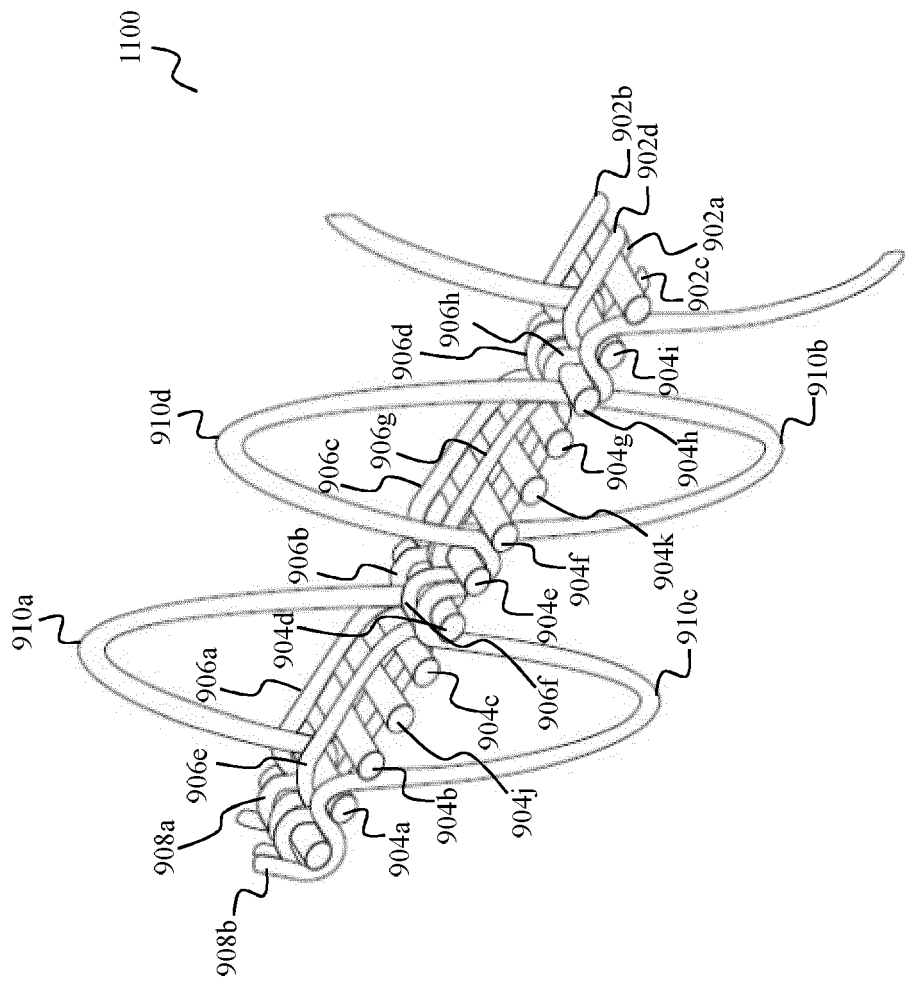


FIGURE 11

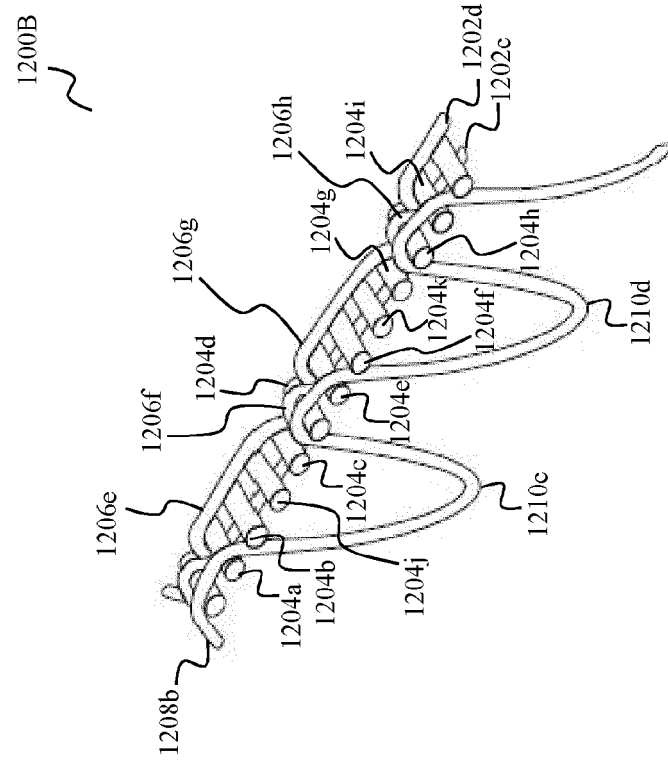


FIGURE 13

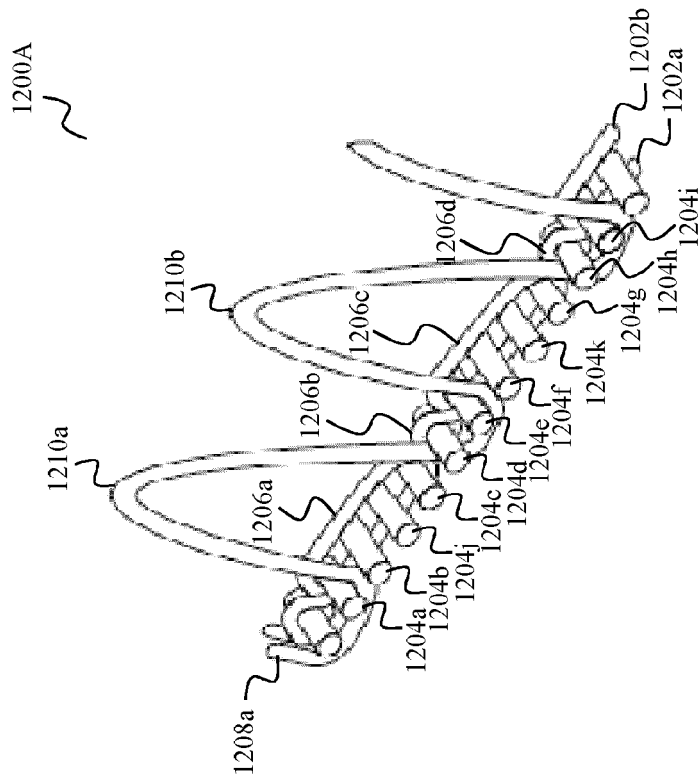


FIGURE 12

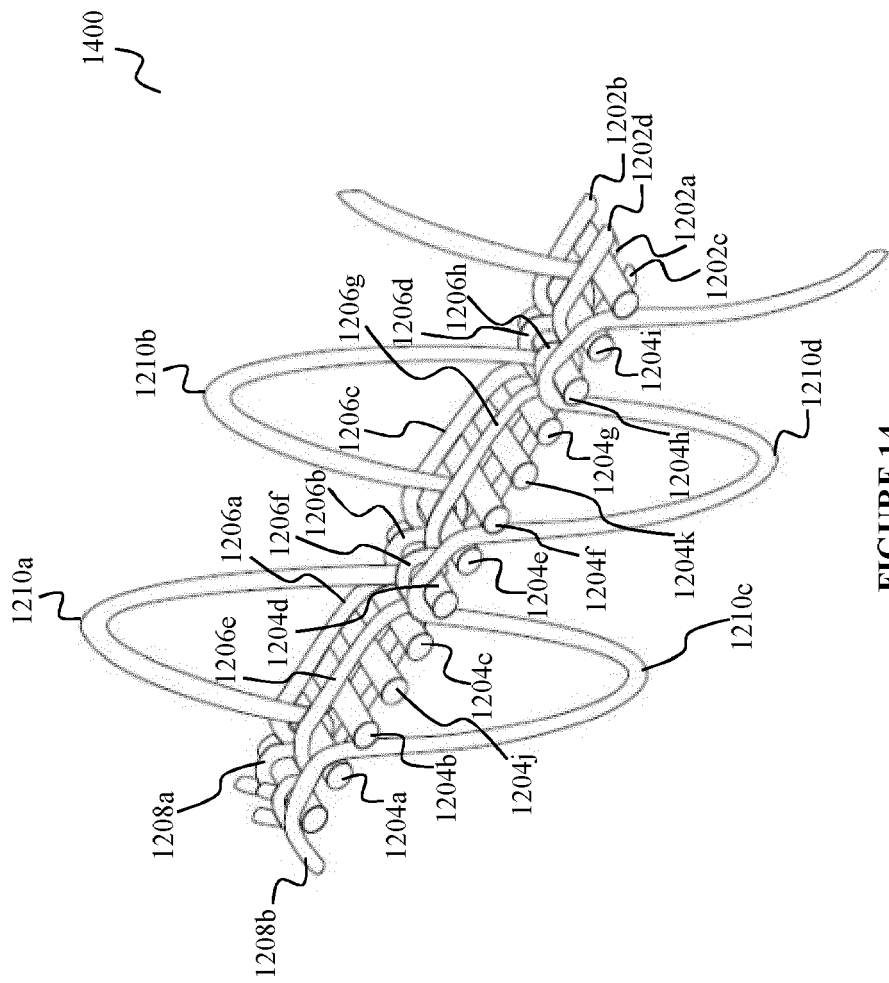


FIGURE 14

1500A

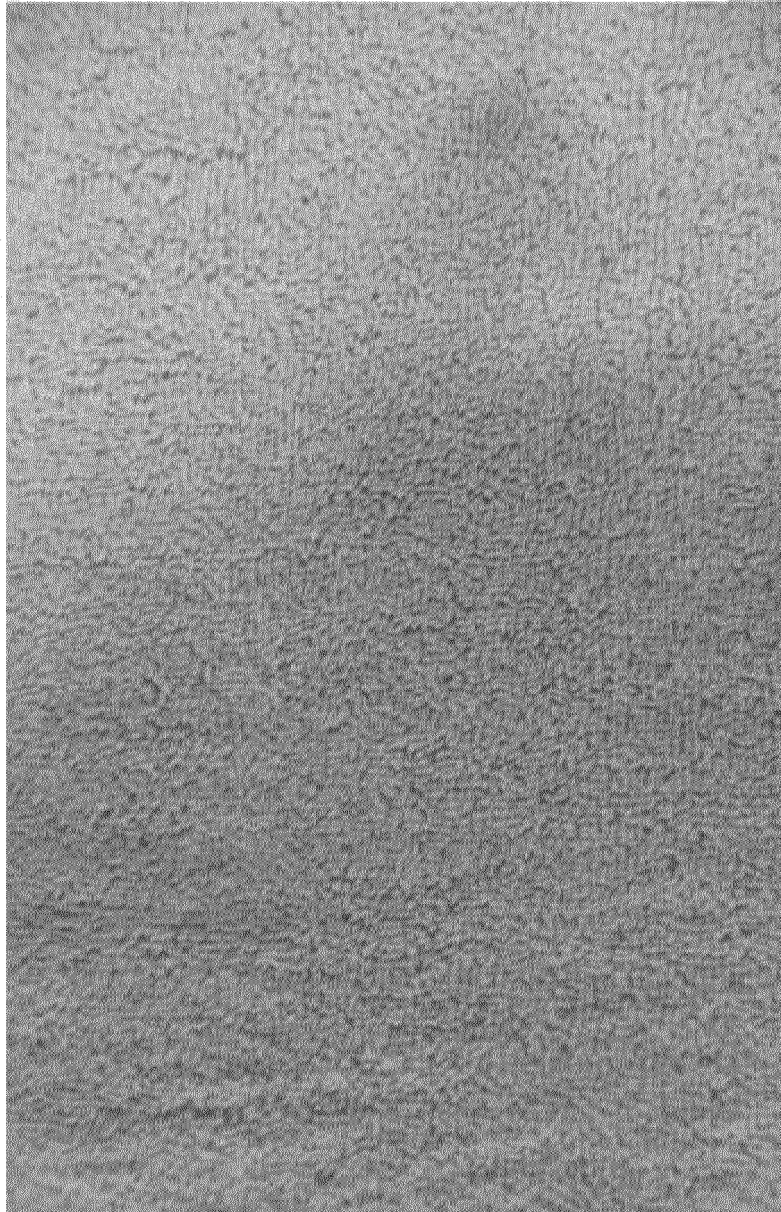


FIGURE 15A

1500B

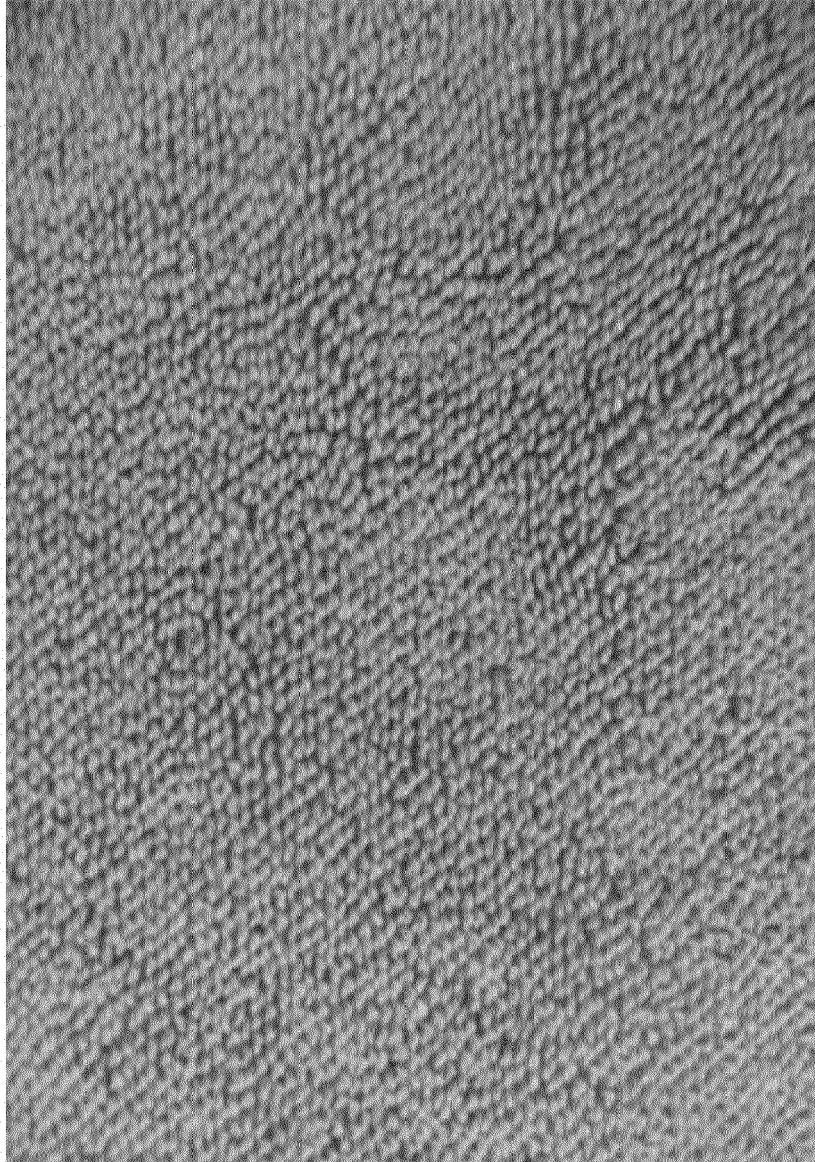


FIGURE 15B

TABLE A					
Parameters	Terry Fabric A (4 Pick Terry Fabric In Accordance With The Present Invention)	Terry Fabric B (4 Pick Terry Fabric In Accordance With Prior Art Weave Sequence)	Terry Fabric C (3 Pick Terry Fabric In Accordance With A Prior Art Weave Sequence)	Terry Fabric D (4 Pick Terry Fabric In Accordance With A Prior Art Weave Sequence)	Terry Fabric E (5 Pick Terry Fabric In Accordance With The Present Invention)
Grams/Square Meter (GSM) (Towel Average)	680	680	680	750	680
Pick/cm	20	10.8	14	18.5	25.5
Pile height (mm)	6.69	6.68	3.74	7.09	7.15
Pile Count (Ne)	2/09 CW	2/09 CW	2/09 CW	2/20 CW	2/09 CW
Ground Count (Resultant Ne)	10	10	10	10	10
Wefl Count	12	12	12	12	12
Loop density / dm	1887	2214	2869	3792	2406
Drawing	2 Ground 1 Pile	2 Ground 2 Pile	2 Ground 2 Pile	2 Ground 2 Pile	2 Ground 1 Pile
Cover Factor (Wefl)	14.66	7.92	10.27	13.56	18.70
Pile Yarn per Inch	10.50	28.00	28.00	28.00	10.50
Absorbency (ASTM D4772) After 1 Wash	86%	86%	80%	87%	84%
Tensile Strength (in lbf) (Wefl) ASTM D5034	67.1	36.2	63.8	71.1	73.5

FIGURE 16



EUROPEAN SEARCH REPORT

Application Number
EP 16 20 0823

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2005/178458 A1 (MITCHELL PAUL H [US] ET AL) 18 August 2005 (2005-08-18) * figures 5a, 5b * * paragraph [0030] * -----	1-16	INV. D03D27/08
A	US 1 830 892 A (TALBIRT JOHN A) 10 November 1931 (1931-11-10) * figure 1 * -----	1-16	
A	US 7 762 286 B1 (SPEAKS BRADLEY T [US] ET AL) 27 July 2010 (2010-07-27) * figures 3-7 * * claims 1-7 * -----	1-16	
			TECHNICAL FIELDS SEARCHED (IPC)
			D03D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 24 May 2017	Examiner Hausding, Jan
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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24-05-2017

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US 1830892 A	10-11-1931	NONE	
US 7762286 B1	27-07-2010	NONE	

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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82