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(54) FLEXIBLE, ABRASION RESISTANT WOVEN TEXTILE SLEEVE AND METHOD OF CONTRUCTION THEREOF

FLEXIBLE ABNUTZUNGSBESTÄNDIGE TEXTILHÜLLE UND VERFAHREN ZUR HERSTELLUNG DAVON

MANCHON TEXTILE TISSÉ SOUPLE RÉSISTANT À L'ABRASION, ET PROCÉDÉ DE CONSTRUCTION CORRESPONDANT

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(73) Proprietor: **Federal-Mogul Powertrain LLC**
Southfield, MI 48034 (US)

(72) Inventors:
- **WOODRUFF, Alexa A.**
  Bryn Mawr, PA 19010 (US)
- **MALLOY, Cassie M.**
  Trappe, PA 19426 (US)

(74) Representative: **HGF**
1 City Walk
Leeds LS11 9DX (GB)

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Description

BACKGROUND OF THE INVENTION

1. Technical Field

[0001] This invention relates generally to textile sleeves for protecting elongate members, and more particularly to woven sleeves.

2. Related Art

[0002] It is known to wrap wires and wire harnesses in protective sleeves, such as in automobiles, aircraft or aerospace craft, to provide protection to the wires against abrasion, fluid and thermal affects, fa order to achieve the desired protections the protective sleeve may have multiple layers, with some of the layers being specifically provided for different types of protection, For example, one layer may be provided for water resistance, e.g. a sheet of plastic material, while another layer may be provided for abrasion resistance, and yet another layer may be provided for protection against thermal conditions, e.g. a non-woven layer. Although the aforementioned multilayer sleeves may provide suitable protection against the various environmental conditions, unfortunately they are typically bulky, thereby requiring an increased volume of space, and further, they tend to be relatively heavy and exhibit low flexibility. This can prove detrimental in some applications, particularly applications requiring routing cables or hoses through tight, winding areas, as well as applications having weight restrictions, such as aircraft and aerospace applications, for example.

[0003] US 2012/132309 discloses an innerduct constructed from one or more strip-shaped lengths of a woven textile fabric. US 2013/206275 discloses a textile sleeve according to the preamble of claim 1.

SUMMARY OF THE INVENTION

[0004] One aspect of the invention provides a woven sleeve for routing and protecting elongate members from exposure to abrasion and other environmental conditions, such as contamination. The sleeve has a flexible, abrasion resistant self-curling elongate wall constructed from woven monofilament and/or multifilament yams. The wall has opposite edges extending generally parallel to a central axis of the sleeve, wherein the opposite edges overlap one another. The wall is woven with warp yams that extend generally parallel to the central axis of the sleeve and fill yams that extend circumferentially about the sleeve, generally transversely to the central axis. The warp yams are bundled into individual, discrete groups, with each group including a plurality of yams in side-by-side relation with one another, wherein each of the yarns within the same discrete group is Interlaced over the same side of a common fill yarn. The groups of bundled warp yams provide enhanced abrasion resistance to abrasion forced applied along the length of the sleeve, while the fill yams provide the sleeve with enhanced flexibility.

[0005] In accordance with another aspect of the invention, the discrete bundles can extend over a single fill yam and under a single fill yarn in repetition.

[0006] In accordance with another aspect of the invention, the discrete bundles can extend over a plurality of the fill yams and under a plurality of the fill yams in repetition.

[0007] In accordance with another aspect of the invention, each discrete bundle can extend over a pair of the fill yarns and under a pair of the fill yams in repetition.

[0008] In accordance with another aspect of the invention, the opposite edges of the wall can be biased into overlapping relation with one another by the fill yams.

[0009] In accordance with another aspect of the invention, at least some of the warp yarns are provided as multifilament yarns.

[0010] In accordance with another aspect of the invention, each of the warp yarns can be provided as a multifilament yarn.

[0011] In accordance with another aspect of the invention, each of the fill yarns can be provided as a monofilament yarn.

[0012] In accordance with another aspect of the invention, at least some of the warp yarns can be provided as monofilament yarns.

[0013] In accordance with another aspect of the invention, each of the warp yarns can be provided as a monofilament yarn.

[0014] In accordance with another aspect of the invention, a method of constructing a textile sleeve is provided. The method includes weaving an elongate wall having opposite edges extending parallel to a central longitudinal axis of the sleeve with the wall being having warp yarns extending parallel to the central longitudinal axis and fill yarns extending transverse to the warp yarns. Further, the method includes weaving the warp yarns in discrete bundles of yarns, with each of the bundles having warp yarns arranged in side-by-side abutting relation with one another, wherein the warp yarns in each discrete bundle extends over and under the same fill yarns with one another.

[0015] In accordance with another aspect of the invention, the method can further include weaving the bundles over and under a single fill yarn.

[0016] In accordance with another aspect of the invention, the method can further include weaving the bundles over a plurality of fill yarns to form outwardly facing floats.

[0017] In accordance with another aspect of the invention, the method can further include heat-setting at least some of the fill yarns to bias the opposite edges into overlapping relation with one another.

[0018] In accordance with another aspect of the invention, the method can further include providing at least some of the warp yarns as multifilament yarns.

[0019] In accordance with another aspect of the invention, the method can further include providing the fill yarns as multifilament yarns.

[0020] In accordance with another aspect of the invention, the method can further include providing the fill yarns as monofilament yarns.

[0021] In accordance with another aspect of the invention, the method can farther include providing at least some of the warp yarns as monofilament yarns.

[0022] In accordance with another aspect of the invention, the method can further include forming each of the discrete bundles including multifilament and monofilament yarns.

[0023] In accordance with another aspect of the invention, the method can further include weaving the warp yarns and the fill yarns in a basket weave pattern.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] These and other aspects, features and advantages will become readily apparent to those skilled in the art in view of the following detailed description of presently preferred embodiments and best mode, appended claims, and accompanying drawings, in which:

Figure 1 is schematic perspective view of a woven, self-wrapping sleeve constructed in accordance with one aspect of the invention, with the sleeve shown carrying and protecting elongate members therein;

Figure 2 is an enlarged partial view of a wall of the sleeve of Figure 1 constructed in accordance with one embodiment of the invention;

Figure 2A is a view similar to Figure 2 of a wall of the sleeve of Figure 1 constructed in accordance with another embodiment of the invention;

Figure 2B is a view similar to Figure 2 of a wall of the sleeve of Figure 1 constructed in accordance with yet another embodiment of the invention;

Figure 3 is a view similar to Figure 2 of a wall of the sleeve of Figure 1 constructed in accordance with yet another embodiment of the invention;

Figure 3A is a view similar to Figure 3 of a wall of the sleeve of Figure 1 constructed in accordance with yet another embodiment of the invention; and

Figure 3B is a view similar to Figure 3 of a wall of the sleeve of Figure 1 constructed in accordance with yet another embodiment of the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0025] Referring in more detail to the drawings, Figure 1 shows schematic representation of a woven, self-wrapping textile sleeve, referred to hereafter as sleeve 10, constructed in accordance with one aspect of the invention. The sleeve 10 has a wrappable elongate wall 12 for routing and protecting elongate members, such as wires or a wire harness 14, for example, from exposure to abrasion and the ingress of contamination, debris and the like. The elongate wall 12 has opposite edges 16, 17 extending generally parallel to a central, longitudinal axis 18, wherein the edges 16, 17 are preferably biased into overlapping relation with one another in "cigarette wrapped" fashion to fully enclose the elongate members 14 within a central cavity 20 of the sleeve 10. The cavity 20 is readily accessible along the full length of the wall 12 so that the elongate members 14 can be readily disposed radially into the cavity 20, and conversely, removed from the cavity 20, such as during service. To provide the desired protection to the elongate members 14 against abrasion, the wall 12 is woven with individual, discrete warp yarn bundles 22 extending generally parallel to the central longitudinal axis 18, wherein each bundle 22 is made up of a plurality of warp yarns 23 arranged in side-by-side, abutting relation with one another. The wall 12 is further woven with weft yarns, also commonly referred to as fill yarns 24, extending generally circumferentially about the wrapped wall 12 in generally transverse relation to the warp yarns 23. The fill yarns 24 can be provided, at least in part, as heat-settable yarns, if desired, such that upon heat-setting the fill yarns 24 while a curled or wrapped configuration, the wall 12 is biased to self-curl the opposite edges 16, 17 into overlapping relation with one another. The bias is imparted by heat-setting the fill yarns 24, such as heat-settable monofilament or multifilament yarns, into their curled configuration about the central longitudinal axis 18.

[0026] Depending on the application needs, the wall 12 can be constructed having any suitable size, including length and diameter. When the wall 12 is in its self-wrapped tubular configuration, generally free from any externally applied forces, the edges 16, 17 preferably overlap one another at least slightly to folly enclose the cavity 20, and thus, provide enhanced protection to the wires 14 contained in the cavity 20. The edges 16, 17 are readily extendable away from one another under an externally applied force sufficient to overcome the bias imparted by the fill yarns 24 to at least partially open and expose the cavity 20. Accordingly, the wires 14 can be readily disposed into the cavity 20 during assembly or removed from the cavity 20 during service. Upon releasing the externally applied force, the edges 16, 17 return automatically to their natural, overlapping self-wrapped position under the bias imparted by the heat-set fill monofilament yarns 24.

[0027] The discrete warp yarn bundles 22 can be formed of any suitable monofilament and/or multifilament yarns, with an exemplary embodiment of the bundles 22 being shown in Figure 2 as being formed entirely with a plurality of multifilament warp yarns 23. The multifilament warp yarns 23, in addition to providing enhanced abrasion resistance as a result of being bundled in side-by-side, abutting or substantially abutting relation with one another, provide enhanced, optimal surface area coverage to the wall 12, thereby inhibiting the ingress of contamination, debris, or the like into the cavity 20, thereby

providing enhanced protection to the elongate members 14 contained within the cavity 20. In addition, the multifilament yarns 23 facilitate maintaining the fill yarns 24 in their intended, as woven positions by imparting enhanced friction on the fill yarns 24, while also providing the sleeve 10 with sufficient flexibility for routing around comers, for example. In one exemplary sleeve embodiment j the bundles 22 were formed with pairs of the warp yarns 23, wherein the warp yarns 23 were provided as multifilaments having a denier between about 300-500 (~$3.33x10^2$-$5.55x10^2$ grams-per-metre), with an ends-per-inch between about 75-90 (~2953-3543 ends-per-metre). The discrete bundles 22 are shown in Figure 2, by way of example and without limitation, as being woven in a modified basket-type weave pattern, with each bundle 22 extending over a single fill yam 24 and then under a single fill yam 24, in repeating fashion.

[0028] The fill yams 24 can be provided as any suitable monofilament and/or multifilament material, including heat-settable monofilament and/or multifilament polymeric material, such as polyphenylene sulfide (PPS) or polyethyleneterephthalate (PET), for example. In the exemplary sleeve embodiment shown in Figure 2, the fill yarns 24 are heat-settable monofilaments. The monofilaments 24 preferably have a reduced cross-section area (reduced diameter) relative to the warp yarns 23, which facilitates providing the sleeve 10 with an increased degree of flexibility in comparison to that if the monofilaments were larger.

[0029] In Figure 2A, another exemplary embodiment of a sleeve 10' constructed in accordance with the invention is shown, wherein the same reference numerals as used in Figure 2, coupled with a single prime (') are used to identify similar features, The sleeve 10' Is similar to the sleeve 10 of Figure 2; however, rather than the warp yams being provided as multifilaments, the warp yams 23' are provided as monofilaments, thereby rendering the entire sleeve 10' as being constructed of monofilaments, The monofilaments used for the warp yams 23' are at least slightly greater in diameter than the monofilaments used for the fill yams 24'. Otherwise, the pattern of weave of the sleeve 10' is the same as that for the sleeve 10, and thus, no further description is necessary.

[0030] In Figure 2B, another exemplary embodiment of a sleeve 10" constructed in accordance with the invention is shown, wherein the same reference numerals, coupled with a double prime ("), are used to identify similar features. The sleeve 10" is similar to the sleeve 10 of Figure 2; however, rather than the warp yarns being provided as multifilaments, each discrete bundle 22" is formed with a monofilament warp yarn 23" and a multifilament warp yarn 23". The monofilaments used for the warp yarns 23" can be the same as those used for the warp yarns of the sleeve 10' of the Figure 2A, while the multifilament warp yarns 23" can be the same as those used for the warp yarns of the sleeve 10, with the effective diameters of the monofilament and multifilament warp yarns 23" being the same or generally the same. Otherwise, the pattern of weave of the sleeve 10" is the same as that for the sleeve 10, and thus, no further description is necessary.

[0031] In Figure 2C, another exemplary embodiment of a sleeve 10"' constructed in accordance with the invention is shown, wherein the same reference numerals, coupled with a triple prime ('"), are used to identify similar features. The sleeve 10"' is similar to the sleeve 10 of Figure 2; however, rather than the fill yarns being provided as monofilaments, the fill yarns 24'" are provided as multifilaments, thereby rendering the entire sleeve 10'" as being constructed of multifilaments. As with all the prior embodiments, the fill yarns 24'" are woven as individual yarn filaments, and thus, do not extend over and under the same warp yarns as an immediately adjacent fill yarn. The fill yarns 24'", as with the previous embodiments, have an effective diameter that is less than the effective diameter of the individual warp yarns 23'", with an exemplary embodiment being constructed with fill yarns 24'" having a denier between about 200-400 with a pick-per-inch between about 30-50, Otherwise, the pattern of weave of the sleeve 10"' is the same as that for the sleeve 10, and thus, no further description is necessary.

[0032] In Figure 3, another exemplary embodiment of a sleeve 110 constructed in accordance with the invention is shown, wherein the same reference numerals as used in Figure 2, offset by a factor of 100, are used to identify like features. The sleeve 110 is similar to the sleeve 10 of Figure 2; however, rather than the warp yarns 123 and bundles 122 thereof extending over and under a single monofilament fill yarn 123, the discrete bundles of warp yarns 123 extend over a pair of fill yarns 124 and then under a pair of fill yarns 124 in a repetitious pattern, thereby forming a true basket weave pattern. As such, the warp yarns 123 form outwardly facing warp floats 26 extending over a plurality of the fill yarns 124, wherein the floats 26 function to provide further enhanced protection against abrasive forces sliding along the length of the sleeve 10 in the direction indicated by arrow A. Otherwise, the sleeve 110 remains the same as discussed for the sleeve 10 of Figure 2, such that the yarn materials and relative sizes for the warp yarns 123 and the fill yarns 124 are the same, and thus, no further discussion is needed,

[0033] In Figure 3A, another exemplary embodiment of a sleeve 110' constructed in accordance with the invention is shown, wherein the same reference numerals as used in Figure 3, coupled with a single prime ('), are used to identify similar features. The sleeve 110' is similar to the sleeve 110 of Figure 3; however, rather than the warp yarns being provided as multifilaments, the warp yarns 123' are provided as monofilaments, thereby rendering the entire sleeve 110' as being constructed of monofilaments, The monofilaments used for the warp yarns 123' are at least slightly greater in diameter than the monofilaments used for the fill yarns 124', Otherwise, the pattern of weave of the sleeve 110' is the same as

that for the sleeve 110, and thus, no further description is necessary.

[0034] In Figure 3B, another exemplary embodiment of a sleeve 110" constructed in accordance with the invention is shown, wherein the same reference numerals as used in Figure 3, coupled with a double prime ("), are used to identify similar features. The sleeve 110" is similar to the sleeve 110 of Figure 3; however, rather than the warp yarns being provided as multifilaments, each discrete bundle 122" is formed with a monofilament warp yarn 123" and a multifilament warp yarn 123", thereby resulting in a monofilament and a multifilament being in side-by-side, abutting relation with one another. The monofilaments used for the warp yams 123" can be the same as those used for the warp yarns of the sleeve 110' of the Figure 3A, while the multifilament warp yams 123" can be the same as those used for me warp yarns of the sleeve 110 of Figure 3, with the effective diameters of the monofilament and multifilament warp yams 123" being the same or generally the same. Otherwise the pattern of weave of the sleeve 110" is the same as that for the sleeve 110, and thus, no further description is necessary.

[0035] In Figure 3C, another exemplary embodiment of a sleeve 110'" constructed in accordance with the invention is shown, wherein the same reference numerals as used in Figure 3, coupled with a triple prime ('"), are used to identify similar features. The sleeve 110"' is similar to the sleeve 110 of Figure 3; however, rather than the fill yarns being provided as monofilaments, the fill yams 124"' are provided as multifilaments, thereby rendering the entire sleeve 110"' as being constructed of multifilaments. The fill yams 24'", as with the previous embodiments, have an effective diameter that is less than the effective diameter of the individual warp yams 123"', with an exemplary embodiment being constructed with fill yams 124"' having a denier between about 200-400 (~$2.22x10^2$-$4.44x10^2$ grams-per-metre) with a pick-per-inch between about 30-50 (~1181-1969 ends-per-metre). Otherwise, the pattern of weave of the sleeve 110'" is the same as that for the sleeve 110, and thus, no further description is necessary.

Claims

1. A woven textile (10; 10'; 10"; 10"'; 110; 110'; 110"; 110"') sleeve for routing and protecting elongate members (14), comprising:

   an elongate wall (12) having opposite edges (16, 17) extending parallel to a longitudinal central axis (18; 18'; 18"; 18'"; 118; 118'; 118"; 118'") of the sleeve, said wall being woven with warp yarns (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") extending parallel to said central longitudinal axis and fill yarns (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'") extending transversely to said warp yarns,

   characterised in that said warp yarns (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") are woven as discrete bundles (22; 22'; 22"; 22'"; 122; 122'; 122"; 122'") of warp yarns, wherein each said discrete bundle includes a plurality of warp yarns arranged in side-by-side abutting relation with one another, with said warp yarns in each discrete bundle extending over and under the same said fill yarns (24; 24'; 24"; 24"'; 124; 124'; 124"; 124'") with one another.

2. The textile sleeve (10; 10'; 10"; 10'"; 110; 110'; 110"; 110'") of claim 1 wherein each said discrete bundle (22; 22'; 22"; 22'"; 122; 122'; 122"; 122'") extends over a single fill yarn (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'") and under a single fill yarn in repetition.

3. The textile sleeve (10; 10'; 10"; 10'"; 110; 110'; 110"; 110'") of claim 1 wherein each said bundle (22; 22'; 22"; 22'"; 122; 122'; 122"; 122'") extends over a plurality of said fill yarns (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") and under a plurality of said fill yarns in repetition, wherein optionally each said bundle extends over a pair of said fill yarns and under a pair of said fill yarns in repetition.

4. The textile sleeve (10; 10'; 10"; 10'"; 110; 110'; 110"; 110'") of claim 1 wherein said fill yarns (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") are heat-settable to bias said opposite edges (16, 17) into overlapping relation with one another.

5. The textile sleeve (10; 10'; 10"; 10'"; 110; 110'; 110"; 110'") of claim 1 wherein at least some of said warp yarns (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") are provided as multifilament yarns.

6. The textile sleeve (10; 10'; 10"; 10'"; 110; 110'; 110"; 110'") of claim 5 wherein each of said warp yarns (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") is provided as a multifilament yarn, wherein optionally each of said fill yarns (24; 24'; 24"; 24"'; 124; 124'; 124"; 124'") is provided as a monofilament yarn.

7. The textile sleeve (10; 10'; 10"; 10'"; 110; 110'; 110"; 110'") of claim 5 wherein at least some of said warp yarns (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") are provided as monofilament yarns.

8. The textile sleeve (10; 10'; 10"; 10'"; 110; 110'; 110"; 110'") of claim 1 wherein each said warp yarns (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") is provided as a monofilament yarn.

9. A method of constructing a textile sleeve (10; 10'; 10"; 10'"; 110; 110'; 110"; 110"'), comprising:

weaving an elongate wall (12) having opposite edges (16, 17) extending parallel to a central longitudinal axis of the sleeve with the wall being having warp yarns (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") extending parallel to the central longitudinal axis (18; 18'; 18"; 18'"; 118; 118'; 118"; 118'") and fill yarns (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'") extending transverse to the warp yarns; **characterised by** the step of
weaving the warp yarns in discrete bundles (22; 22'; 22"; 22'"; 122; 122'; 122"; 122'") of yarns, each of the bundles having warp yarns arranged in side-by-side abutting relation with one another, with the warp yarns in each discrete bundle extending over and under the same fill yarns with one another.

10. The method of claim 9 further including weaving the bundles (22; 22'; 22"; 22'"; 122; 122'; 122"; 122'") over and under a single fill yarn (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'"), or
weaving the bundles over a plurality of fill yarns to form outwardly facing floats (26; 26'; 26"; 26"'), or
heat-setting at least some of the fill yarns to bias the opposite edges (16, 17) into overlapping relation with one another.

11. The method of claim 9 further including providing at least some of the warp yarns (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") as multifilament yarns.

12. The method of claim 11 further including providing the fill yarns (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'") as multifilament yarns.

13. The method of claim 11 further including providing the fill yarns (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'") as monofilament yarns.

14. The method of claim 11 further including providing at least some of the warp yarns (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'") as monofilament yarns, wherein optionally forming each of the discrete bundles (22; 22'; 22"; 22'"; 122; 122'; 122"; 122'") including multifilament and monofilament yarns.

15. The method of claim 9 further including weaving the warp yarns (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") and the fill yarns (24; 24'; 24"; 24"'; 124; 124'; 124"; 124'") in a basket weave pattern.

Patentansprüche

1. Gewebte Textilhülse (10; 10'; 10"; 10"'; 110; 110'; 110"; 110"') zum Trassieren und Schützen von länglichen Elementen (14), umfassend:

eine längliche Wand (12) mit gegenüberliegenden Kanten (16, 17), die sich parallel zu einer Längsmittelachse (18; 18'; 18"; 18'"; 118; 118'; 118"; 118'") der Hülse erstrecken, wobei die Wand mit Kettgarnen (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'"), die sich parallel zu der zentralen Längsachse erstrecken, und Schussgarnen (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'"), die sich quer zu den Kettgarnen erstrecken, gewebt ist,
dadurch gekennzeichnet, dass die Kettgarne (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") als separate Bündel (22; 22'; 22"; 22'"; 122; 122'; 122"; 122'") von Kettgarnen gewebt sind, wobei jedes separate Bündel eine Vielzahl von Kettgarnen umfasst, die nebeneinander aneinanderstoßend angeordnet sind, wobei sich die Kettgarne in jedem separaten Bündel über und unter den gleichen Schussgarnen (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'") miteinander erstrecken.

2. Textilhülse (10; 10'; 10"; 10'"; 110; 110'; 110"; 110'") nach Anspruch 1, wobei sich jedes separate Bündel (22; 22'; 22"; 22'"; 122; 122'; 122"; 122'") über einem einzelnen Schussgarn (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'") und unter einem einzelnen Schussgarn in Wiederholung erstreckt.

3. Textilhülse (10; 10'; 10"; 10'"; 110; 110'; 110"; 110'") nach Anspruch 1, wobei sich jedes Bündel (22; 22'; 22"; 22'"; 122; 122'; 122"; 122'") über eine Vielzahl der Schussgarne (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") und unter einer Vielzahl der Schussgarne in Wiederholung erstreckt, wobei sich optional jedes Bündel über ein Paar der Schussgarne und unter ein Paar der Schussgarne in Wiederholung erstreckt.

4. Textilhülse (10; 10'; 10"; 10'"; 110; 110'; 110"; 110'") nach Anspruch 1, wobei die Schussgarne (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") thermofixierbar sind, um die gegenüberliegenden Kanten (16, 17) in eine überlappende Beziehung zueinander vorzuspannen.

5. Textilhülse (10; 10'; 10"; 10'"; 110; 110'; 110"; 110'") nach Anspruch 1, wobei mindestens einige der Kettgarne (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") als Multifilamentgarne bereitgestellt sind.

6. Textilhülse (10; 10'; 10"; 10"'; 110; 110'; 110"; 110"') nach Anspruch 5, wobei jedes der Kettgarne (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") als Multifilamentgarn bereitgestellt ist, wobei optional jedes der Schussgarne (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'") als Monofilamentgarn bereitgestellt ist.

7. Textilhülse (10; 10'; 10"; 10'"; 110; 110'; 110"; 110'") nach Anspruch 5, wobei mindestens einige der Kett-

garne (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") als Monofilamentgarne bereitgestellt sind.

8. Textilhülse (10; 10'; 10"; 10'"; 110; 110'; 110"; 110"') nach Anspruch 1, wobei jedes der Kettgarne (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") als Monofilamentgarn bereitgestellt ist.

9. Verfahren zum Aufbauen einer Textilhülse (10; 10'; 10"; 10'"; 110; 110'; 110"; 110'"), umfassend:
Weben einer länglichen Wand (12) mit gegenüberliegenden Kanten (16, 17), die sich parallel zu einer zentralen Längsachse der Hülle erstrecken, wobei die Wand Kettgarne (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'"), die sich parallel zur zentralen Längsachse (18; 18'; 18"; 18'"; 118; 118'; 118"; 118"') erstrecken, und Schussgarne (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'") aufweist, die sich quer zu den Kettgarnen erstrecken; **gekennzeichnet durch** den Schritt des Webens der Kettgarne in separaten Bündeln (22; 22'; 22"; 22'"; 122; 122'; 122"; 122'") von Garnen, wobei jedes der Bündel Kettgarne aufweist, die nebeneinander aneinanderstoßend angeordnet sind, wobei sich die Kettgarne in jedem separaten Bündel über und unter den gleichen Schussgarnen miteinander erstrecken.

10. Verfahren nach Anspruch 9, ferner umfassend das Weben der Bündel (22; 22'; 22"; 22'"; 122; 122'; 122"; 122'") über und unter einem einzelnen Schussgarn (24; 24'; 24"; 24'"; 124; 124'; 124"; 124"'), oder
Weben der Bündel über einer Vielzahl von Schussgarnen, um nach außen gerichtete Flottierungen (26; 26'; 26"; 26'") zu bilden, oder
Thermofixieren von mindestens einigen der Schussgarne, um die gegenüberliegenden Kanten (16, 17) in eine überlappende Beziehung zueinander vorzuspannen.

11. Verfahren nach Anspruch 9, ferner umfassend das Bereitstellen von mindestens einigen der Kettgarne (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") als Multifilamentgarne.

12. Verfahren nach Anspruch 11, ferner umfassend das Bereitstellen der Schussgarne (24; 24'; 24"; 24"'; 124; 124'; 124"; 124"') als Multifilamentgarne.

13. Verfahren nach Anspruch 11, ferner umfassend das Bereitstellen der Schussgarne (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'") als Monofilamentgarne.

14. Verfahren nach Anspruch 11, ferner umfassend das Bereitstellen von mindestens einigen der Kettgarne (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'") als Monofilamentgarne, wobei optional jedes der separaten Bündel (22; 22'; 22"; 22'"; 122; 122'; 122"; 122'") einschließlich Multifilament- und Monofilamentgarne gebildet wird.

15. Verfahren nach Anspruch 9, ferner umfassend das Weben der Kettgarne (23; 23'; 23"; 23'"; 123; 123'; 123"; 123'") und der Schussgarne (24; 24'; 24"; 24'"; 124; 124'; 124"; 124'") in einem Korbflechtmuster.

Revendications

1. Manchon textile tissé (10 ; 10' ; 10" ; 10"' ; 110 ; 110' ; 110" ; 110"') destiné à acheminer et à protéger des éléments allongés (14), comprenant :

une paroi allongée (12) possédant des bords opposés (16, 17) s'étendant parallèles à un axe central longitudinal (18 ; 18' ; 18" ; 18"' ; 118 ; 118'; 118" ; 118"') du manchon, ladite paroi étant tissée avec des fils de chaîne (23 ; 23' ; 23" ; 23"' ; 123 ; 123' ; 123" ; 123"') s'étendant parallèles audit axe central longitudinal et des fils de trame (24 ; 24' ; 24" ; 24"' ; 124 ; 124' ; 124"; 124"') s'étendant transversalement auxdits fils de chaîne,
caractérisé en ce que lesdits fils de chaîne (23 ; 23' ; 23" ; 23"' ; 123 ; 123' ; 123" ; 123"') sont tissés sous forme de faisceaux distincts (22 ; 22' ; 22" ; 22"' ; 122 ; 122' ; 122" ; 122"') de fils de chaîne, chacun desdits faisceaux distincts comprenant une pluralité de fils de chaîne agencés côte à côte en relation de butée les uns avec les autres, lesdits fils de chaîne dans chaque faisceau distinct s'étendant sur et sous lesdits mêmes fils de trame (24 ; 24' ; 24" ; 24"' ; 124 ; 124' ; 124"; 124"') les uns avec les autres.

2. Manchon textile (10 ; 10' ; 10" ; 10"' ; 110 ; 110' ; 110" ; 110'") selon la revendication 1, chaque faisceau distinct (22 ; 22' ; 22" ; 22"' ; 122 ; 122' ; 122" ; 122"') s'étendant sur un fil de trame simple (24 ; 24' ; 24" ; 24"' ; 124 ; 124' ; 124"; 124"') et sous un fil de trame simple en répétition.

3. Manchon textile (10 ; 10' ; 10" ; 10"' ; 110 ; 110' ; 110" ; 110'") selon la revendication 1, chaque faisceau (22 ; 22' ; 22" ; 22"' ; 122 ; 122' ; 122" ; 122"') s'étendant sur une pluralité de fils de trame (23 ; 23' ; 23" ; 23"' ; 123 ; 123' ; 123" ; 123"') et sous une pluralité de fils de trame en répétition, éventuellement chaque faisceau s'étendant sur une paire desdits fils de trame et sous une paire desdits fils de trame en répétition.

4. Manchon textile (10 ; 10' ; 10" ; 10"' ; 110 ; 110' ; 110" ; 110'") selon la revendication 1, lesdits fils de trame (23 ; 23' ; 23" ; 23"' ; 123 ; 123' ; 123" ; 123"') étant thermofixés pour solliciter lesdits bords opposés (16, 17) dans une relation de chevauchement

l'un avec l'autre.

5. Manchon textile (10 ; 10' ; 10" ; 10"' ; 110 ; 110' ; 110" ; 110'") selon la revendication 1, au moins certains desdits fils de chaîne (23 ; 23' ; 23" ; 23"' ; 123 ; 123' ; 123" ; 123"') étant fournis sous forme de fils multifilaments.

6. Manchon textile (10 ; 10' ; 10" ; 10"' ; 110 ; 110' ; 110" ; 110"') selon la revendication 5, chacun desdits fils de chaîne (23 ; 23' ; 23" ; 23"' ; 123 ; 123' ; 123" ; 123"') étant fourni sous la forme d'un fil multifilament, éventuellement chacun desdits fils de trame (24 ; 24' ; 24" ; 24"' ; 124 ; 124' ; 124"; 124"') étant fourni sous la forme d'un fil monofilament.

7. Manchon textile (10 ; 10' ; 10" ; 10"' ; 110 ; 110' ; 110" ; 110'") selon la revendication 5, au moins certains desdits fils de chaîne (23 ; 23' ; 23" ; 23"' ; 123 ; 123' ; 123" ; 123"') étant fournis sous forme de fils monofilaments.

8. Manchon textile (10 ; 10' ; 10" ; 10"' ; 110 ; 110' ; 110" ; 110'") selon la revendication 1, chaque fil de chaîne (23 ; 23' ; 23" ; 23"' ; 123 ; 123' ; 123" ; 123"') étant fourni sous la forme d'un fil monofilament.

9. Procédé de construction d'un manchon textile (10 ; 10' ; 10" ; 10"' ; 110 ; 110' ; 110" ; 110'"), comprenant :
le tissage d'une paroi allongée (12) possédant des bords opposés (16, 17) s'étendant parallèles à un axe longitudinal central du manchon avec la paroi possédant des fils de chaîne (23 ; 23' ; 23" ; 23"' ; 123 ; 123' ; 123" ; 123"') s'étendant parallèles à l'axe longitudinal central (18 ; 18'; 18" ; 18"' ; 118 ; 118' ; 118" ; 118"') et des fils de trame (24 ; 24' ; 24" ; 24"' ; 124 ; 124' ; 124"; 124"') s'étendant transversalement aux fils de chaîne ; **caractérisé par** l'étape de tissage des fils de chaîne en faisceaux distincts (22 ; 22' ; 22" ; 22"' ; 122 ; 122' ; 122" ; 122"') de fils, chacun des faisceaux possédant des fils de chaîne agencés côte à côte dans une relation de butée les uns avec les autres, les fils de chaîne de chaque faisceau distinct s'étendant sur et sous les mêmes fils de trame les uns avec les autres.

10. Procédé selon la revendication 9, comprenant en outre le tissage des faisceaux (22 ; 22' ; 22" ; 22"' ; 122 ; 122' ; 122" ; 122"') sur et sous un seul fil de trame (24 ; 24' ; 24" ; 24"' ; 124 ; 124' ; 124"; 124"'), ou
le tissage des faisceaux sur une pluralité de fils de trame pour former des flotteurs orientés vers l'extérieur (26 ; 26' ; 26" ; 26"'), ou
la thermofixation d'au moins certains des fils de trame pour solliciter les bords opposés (16, 17) en relation de chevauchement les uns avec les autres.

11. Procédé selon la revendication 9, comprenant en outre la fourniture d'au moins certains des fils de chaîne (23 ; 23' ; 23" ; 23"' ; 123 ; 123' ; 123" ; 123"') sous forme de fils multifilaments.

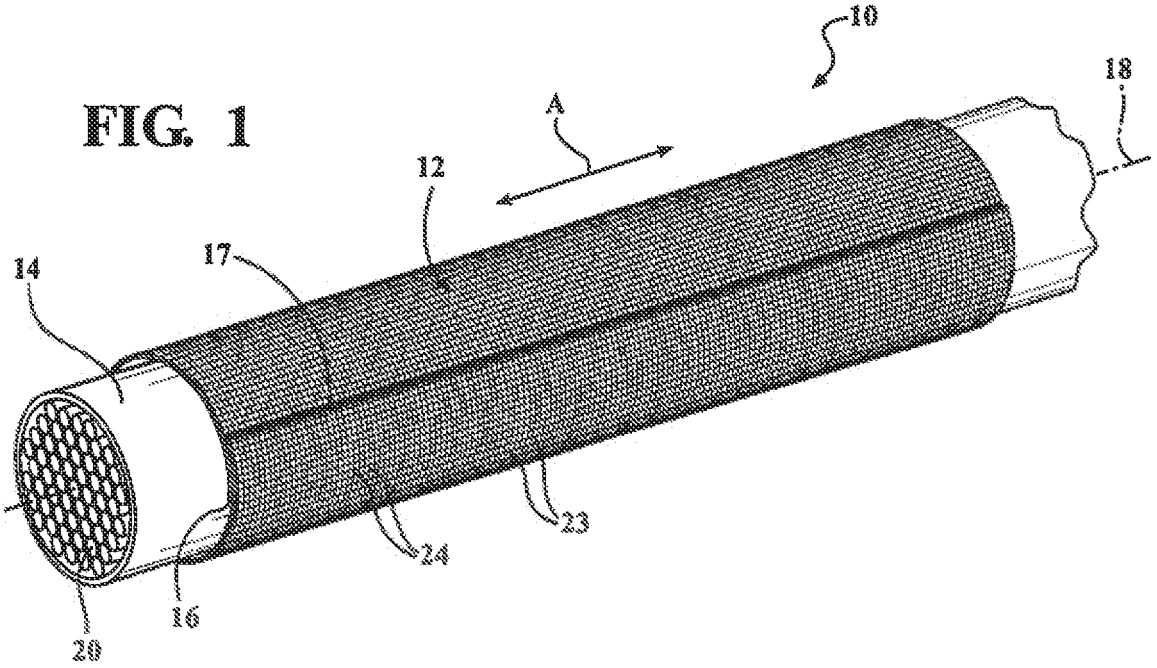
12. Procédé selon la revendication 11, comprenant en outre la fourniture des fils de trame (24 ; 24' ; 24" ; 24"' ; 124 ; 124' ; 124"; 124"') sous forme de fils multifilaments.

13. Procédé selon la revendication 11, comprenant en outre la fourniture des fils de chaîne (24 ; 24' ; 24" ; 24"' ; 124 ; 124' ; 124"; 124"') sous forme de fils multifilaments.

14. Procédé selon la revendication 11, comprenant en outre la fourniture d'au moins certains des fils de chaîne (24 ; 24' ; 24" ; 24"' ; 124 ; 124' ; 124"; 124"') sous forme de fils monofilaments, éventuellement ladite formation de chacun des faisceaux distincts (22 ; 22' ; 22" ; 22"' ; 122 ; 122' ; 122" ; 122"') comprenant des fils multifilaments et monofilaments.

15. Procédé selon la revendication 9, comprenant en outre le tissage des fils de chaîne (23 ; 23' ; 23" ; 23"' ; 123 ; 123' ; 123" ; 123"') et des fils de trame (24 ; 24' ; 24" ; 24"' ; 124 ; 124' ; 124"; 124"') dans un motif de tissage de panier.

FIG. 1



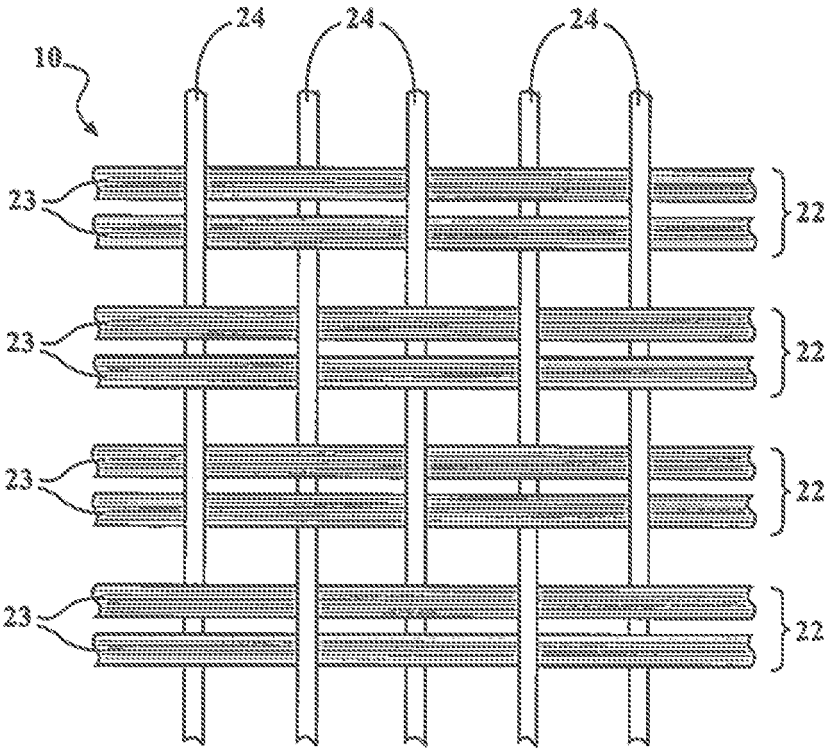
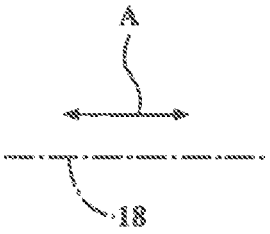


FIG. 2



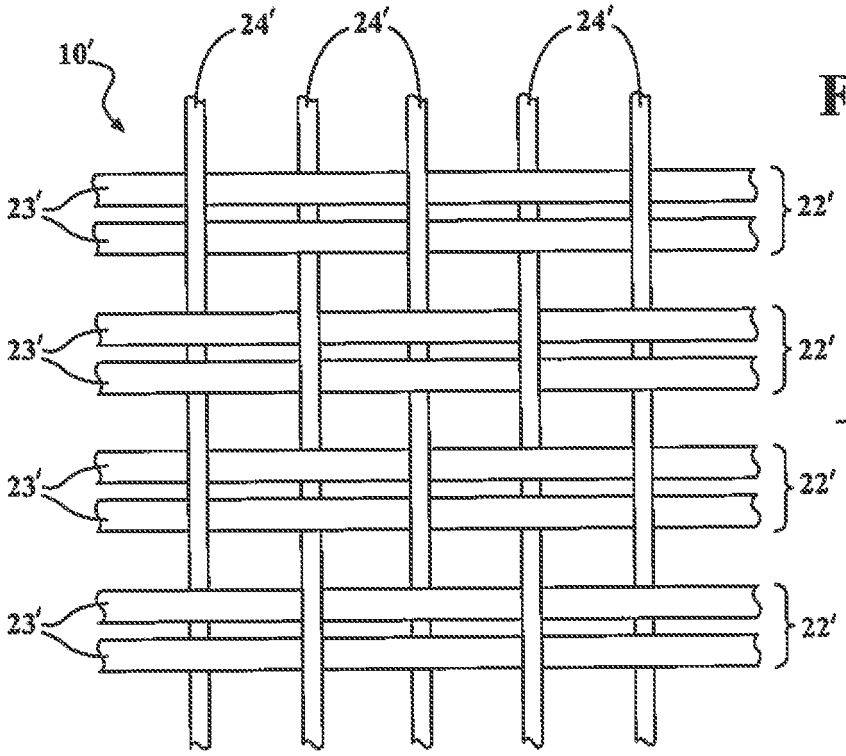

10'
24'
24'
24'
23'
23'
23'
23'
22'
22'
22'
22'
A
18'

FIG. 2A

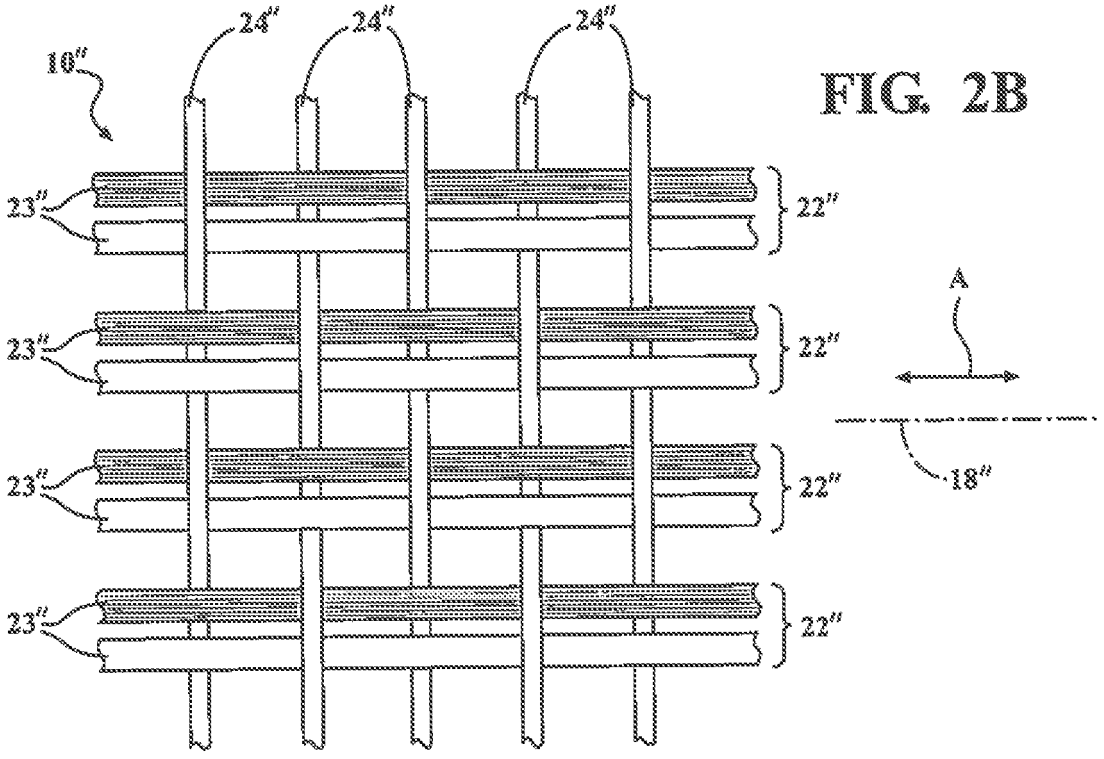

10"
24"
24"
24"
23"
23"
23"
23"
22"
22"
22"
22"
A
18"

FIG. 2B

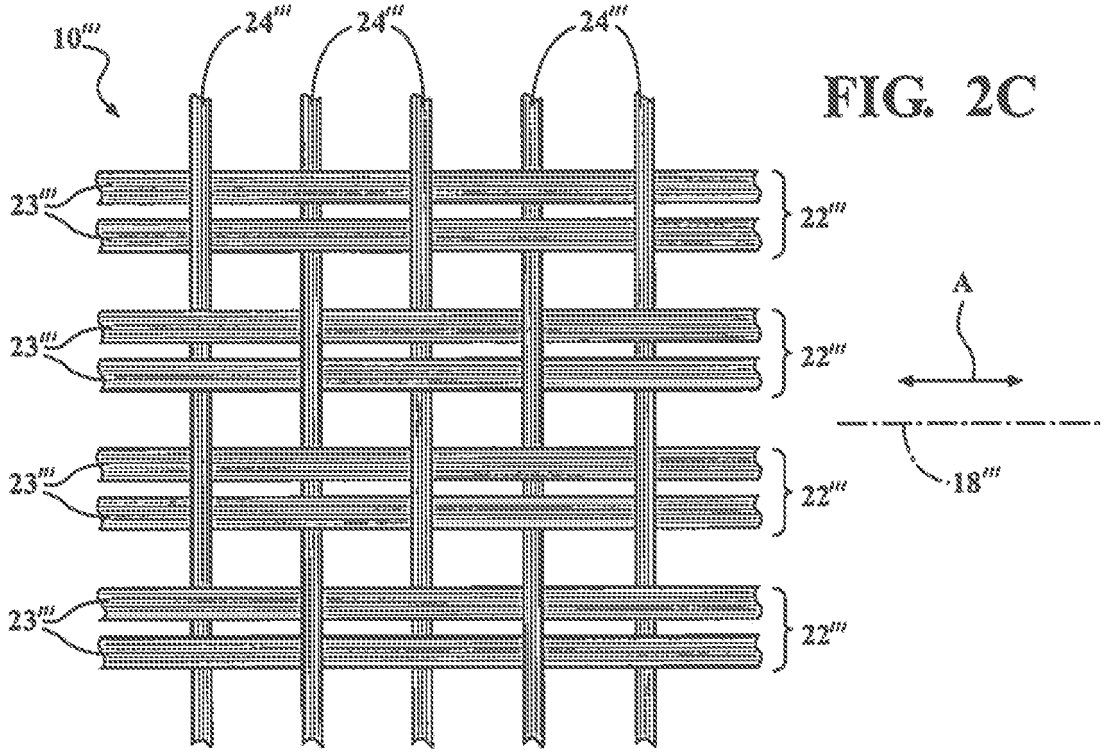

10'''
24'''
24'''
24'''
23'''
23'''
23'''
23'''
22'''
22'''
22'''
22'''
A
18'''

FIG. 2C

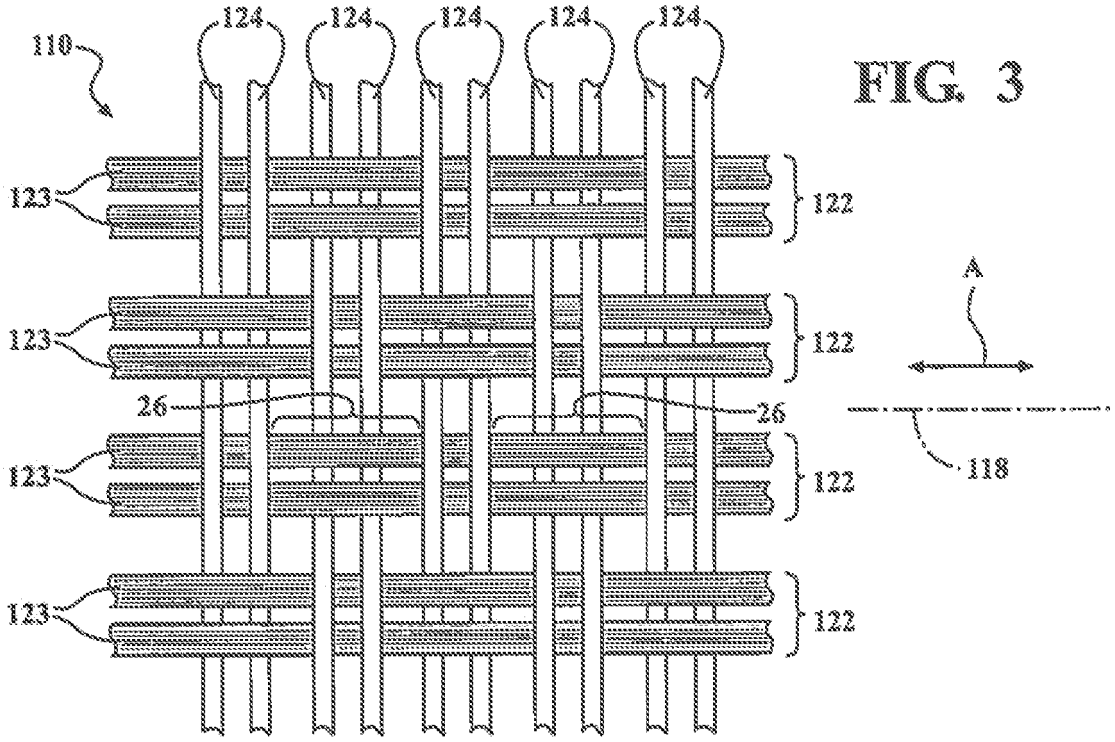

110
124
124
124
124
124
123
123
123
123
122
122
122
122
26
26
A
118

FIG. 3

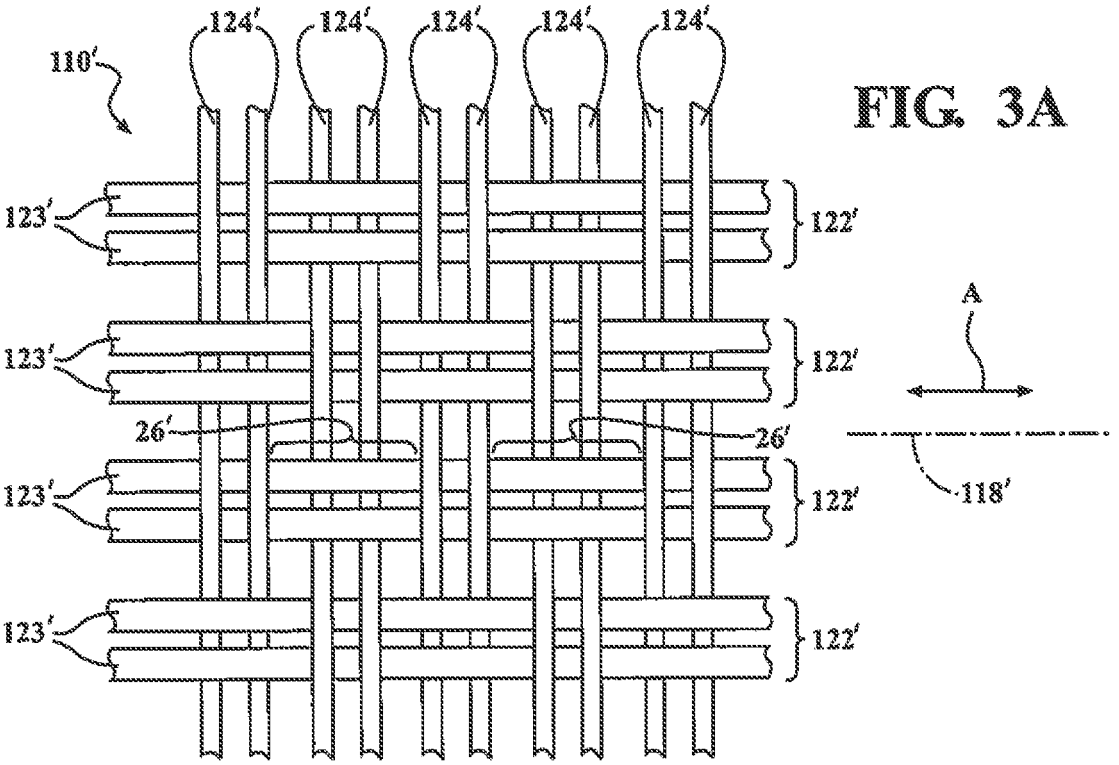

124'
124'
124'
124'
124'
110'
123'
122'
123'
122'
26'
26'
123'
122'
123'
122'
A
118'

FIG. 3A

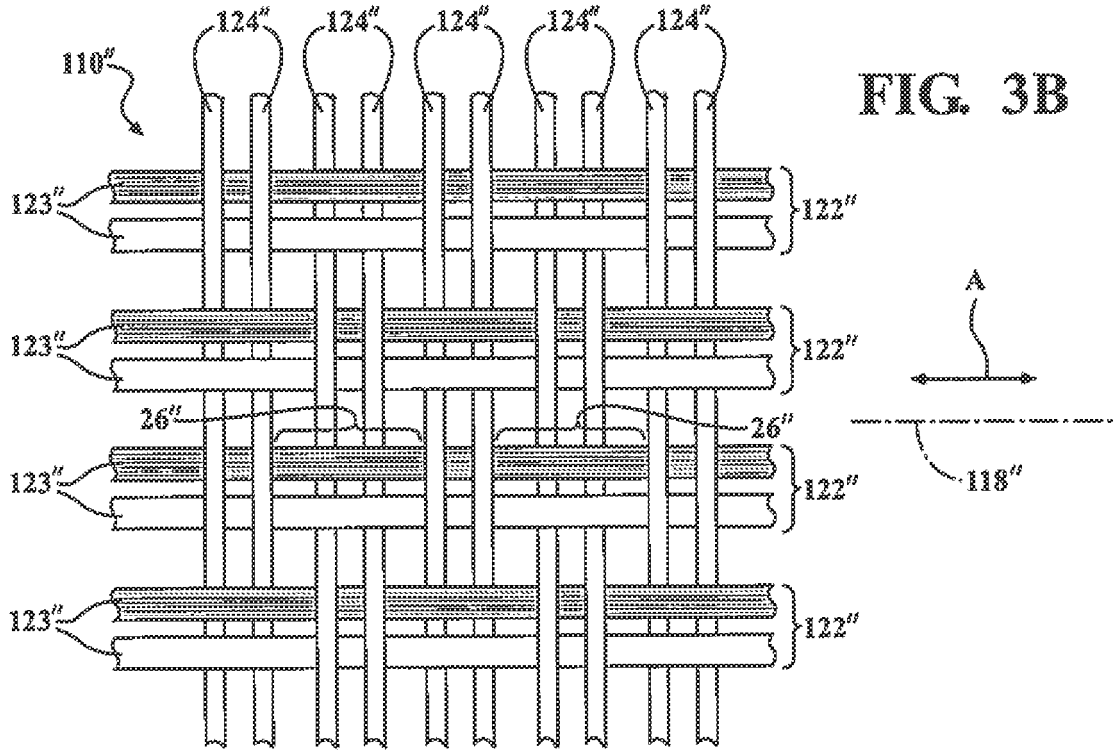

124"
124"
124"
124"
124"
110"
123"
122"
123"
122"
26"
26"
123"
122"
123"
122"
A
118"

FIG. 3B

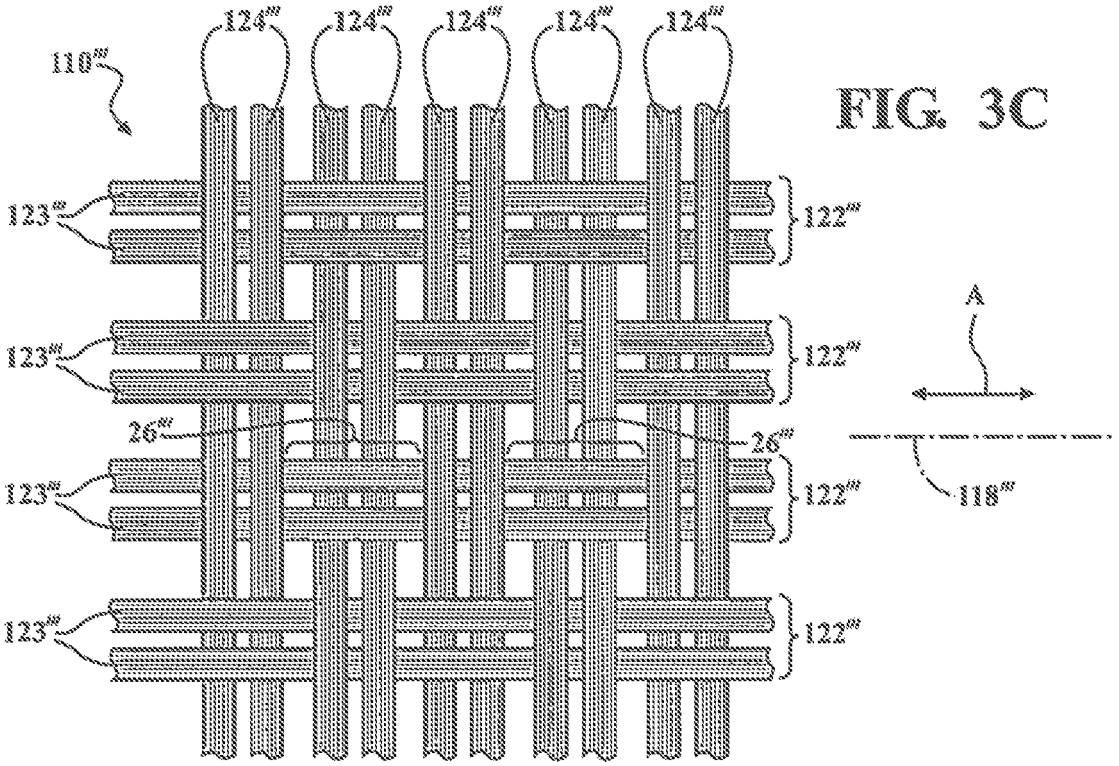

124‴
124‴
124‴
124‴
124‴
110‴
123‴
122‴
123‴
122‴
26‴
26‴
123‴
122‴
123‴
122‴
A
118‴

FIG. 3C

REFERENCES CITED IN THE DESCRIPTION

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