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(54) **FABRIC WITH FLOAT STITCH AND METHOD OF MANUFACTURE IN A WARP KNITTING MACHINE**

(57) The present invention relates to a fabric comprising a fabric substrate made up of two yarns (1, 2) woven with one another, and a third yarn (3) oriented in the vertical direction of manufacture of the fabric substrate, which third yarn (3) is not part of the fabric substrate (1, 2) and is anchored to said fabric substrate in several stitching points or points spaced from one another

by a varying degree in at least said vertical direction of manufacture, said third yarn (3) being loose between the points for anchoring to the fabric substrate (1, 2), making up on one of the faces of the fabric substrate (1, 2) several float stitches of any predetermined length. The invention includes a method of manufacture of the mentioned fabric with float stitch.

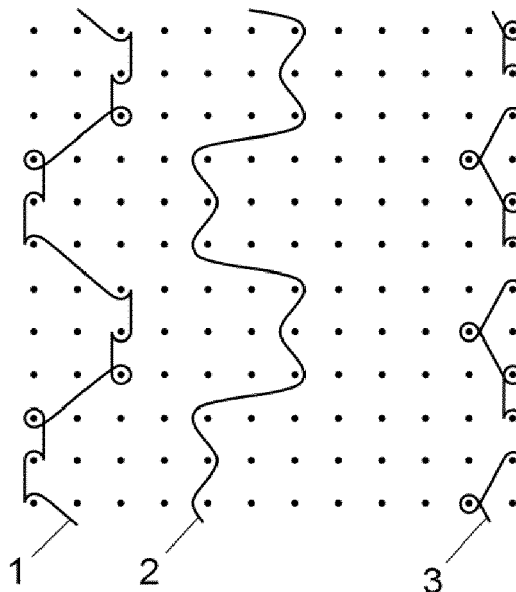


Fig. 1

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Description

TECHNICAL FIELD

[0001] The present invention relates to a fabric with a float stitch on one face, and to method of manufacture thereof in a warp machine, specifically in a conventional warp machine and without using special devices (sinters, needles, or mechanisms).

PRIOR ART

[0002] Terry fabrics are very well-known today, and they are applied in different sectors, both in drying products (towels, robes, etc.) and in ready-to-wear fashion, the automotive industry, filters, cleaning, sports, etc.

[0003] These fabrics are made using different types of both circular and warp machines and technologies. In either system, the machines are prepared for making said fabric with special parts in order to produce the terry.

[0004] Therefore, these machines have the possibility of making a terry on both faces or on one face of the fabric, depending on the final application of the fabric.

[0005] This terry is always formed in the fabric in a horizontal manner, because the loops or rings making up the terry are made up of warp yarns projecting from the surface of the fabric. Usually these terry fabrics are made up of two picks and four reeds in warp machines.

[0006] These machines furthermore require specific special mechanisms for making said terry fabrics, such as normal needles alternated with special needles, in addition to having more advanced positions of these special needles and special siners.

[0007] Terry fabrics have a very definite shape (loop or bridge type) on the substrate of the fabric and oriented in the fabric.

[0008] Given their structure, terry fabrics have certain limitations, among which are the length of the terry and the fact that the formation of the terry must always be done in the horizontal direction and with the warp yarn itself, it being unfeasible to obtain novelties with yarns having very long lengths.

[0009] The applicant of the invention does not know of the existence on the market of a fabric with float stitch that allows solving these drawbacks or that has features similar to those of the present invention.

DISCLOSURE OF THE INVENTION

[0010] The fabric with float stitch object of the invention has particular constructive features that allow solving the limitations mentioned with respect to terry fabrics.

[0011] This fabric comprises a fabric substrate made up of two yarns woven with one another and a third yarn oriented in the vertical direction or direction of manufacture of the fabric substrate, which third yarn is anchored to several stitching points of the fabric substrate spaced from one another by a varying degree in said vertical

direction, the third yarn being loose between the points for anchoring to the fabric substrate, said third yarn on one of the faces of the fabric substrate making up several float stitches of any predetermined length.

[0012] The third yarn making up the float stitches is oriented in the vertical (or longitudinal) direction of the fabric and can be arranged in the vertical direction, in the diagonal direction, or in zigzag.

[0013] Therefore, the purpose of the invention is to be able to weave a fabric substrate with the possibility of making a third reed leave a third yarn that is not part of this substrate and that it is anchored when desired to the substrate by forming a stitching point, such that the machine can weave and correctly detach the stitching points. There may be times when this third yarn works with the fabric substrate and other times when it is on the upper part without being woven. If this yarn is pulled, it can be seen how it is only held to the fabric substrate by its anchors in the points that have been predetermined in the weave of the machine.

[0014] Therefore, this method allows making a different substrate with insertions of different yarns according to the fabric to be obtained or the final application thereof.

[0015] The difference between making a terry and a float stitch oriented in the vertical direction or the direction of manufacture of the fabric is that the stitch can be as long as desired and since the yarn making up same is loose between the points for anchoring to the fabric substrate, it does not have a defined loop or bridge shape as occurs with terry fabrics.

[0016] This invention also includes a method for making the mentioned fabric with float stitch in a warp machine. Said method comprises making a fabric substrate in a conventional warp machine, without special siners, or special needles, or special positions, by means of weaving two yarns and with the intervention of a first group of needles of the warp machine, and forming the float stitches on one face of the fabric by means of a third yarn, with the intervention of a second group of needles of the warp machine which do not work in making the fabric substrate and which anchor a third yarn to the fabric substrate in points spaced from one another at least in the vertical direction or direction of manufacture of the fabric substrate, said third yarn forming a float stitch in which the third yarn is loose and separated from the fabric substrate between the points for the anchoring or attachment to said fabric substrate.

[0017] This method has the particularity that the first group of needles always works in making the fabric substrate, whereas the second group of needles never works in making said fabric substrate, and they only intervene in anchoring the third yarn, making up the float stitches, to the fabric substrate.

[0018] For example, if the even numbered needles work in making said fabric substrate, said even numbered needles will always work and make the stitching points of the fabric substrate; in this case the odd numbered needles will never work in said substrate structure.

[0019] Furthermore, there is no problem if the situation is the opposite, provided that the odd numbered needles always work in making the fabric substrate and the even numbered needles never do.

[0020] This method comprises making the fabric with float stitch in a warp machine with any of the following gauges: 14, 16, 20, 24, 28, 32, 36, and 40. According to the gauge used, the thickness of the yarn will be greater or lesser, so it is possible to work with counts comprised between 20 deniers and 400 deniers.

[0021] According to the invention, the float stitches can be anchored to the fabric substrate in one and the same needle or in different needles, according to the effect sought for creating said stitch or according to the final application for which the fabric is intended.

[0022] The method of manufacture contemplates the initial anchoring of the stitch to the fabric substrate being done in a specific needle of the second group and the final anchoring thereof being done again in the same needle, or it contemplates being initially anchored in a needle of the second group and the anchoring thereof ending in another different needle of the second group. This will be determined by the type of final product to be made with the fabric. The anchors are the points attaching the float stitch to the fabric substrate, such that right at the exit of needles of the machine the float stitch is separated from the fabric substrate on which it is anchored.

[0023] The method of the invention comprises making the fabric with lateral stitch in any type of material that can be woven in a conventional warp machine, both at 100% and in combinations of different percentages, for example, of: polyamide, polyester, cotton, polypropylene, acetate, elastomer. These yarns can be monofilament, multifilament, microfiber, textured, dull, semi dull, ultra dull, or bright yarns, according to the final application of the fabric.

[0024] The most important aspect of this invention lies in the substrate on which the float stitch is to be made.

[0025] The yarn or yarns making the float stitches only work on the needles of the first group when said stitch is anchored to the fabric substrate and being loose while the float stitch is made (i.e. the yarn making up the stitch is completely separated from the substrate), and again making it work in a needle working when it is anchored to the fabric substrate, thereby ending the length of the stitch.

DESCRIPTION OF THE DRAWINGS

[0026] To complement the description being made and for the purpose of helping to understand the features of the invention, a set of drawings is attached to the present specification in which the following is depicted with an illustrative and non-limiting character:

Figures 1, 2 and 3 show diagrams of three embodiments of the fabric with float stitches forming stitches in the vertical direction, in the diagonal direction and

in zigzag, respectively.

[0027] In the example shown in the attached drawings, the fabric with float stitch comprises a fabric substrate made up of two woven yarns (1, 2), said fabric substrate having on one face float stitches made up of a third yarn (3) having the same or different properties as the yarns (1, 2) making up the fabric substrate.

[0028] In the example shown in Figure 1, the third yarn (3) making up the stitches is anchored to the fabric substrate in points vertically spaced from one another, in the direction of manufacture of the fabric substrate, forming vertical stitches.

[0029] The example shown in Figure 2 shows possible points for anchoring the third yarn (3) to the fabric substrate forming float stitches in the diagonal direction.

[0030] The example shown in Figure (3) shows a variant in which the third yarn (3) forming float stitches in zigzag on the fabric substrate (1, 2).

[0031] The float stitches shown in the attached drawings, independently of their formation in the vertical direction, in the diagonal direction or in zigzag, can be longer or shorter according to the final effect sought and the final application of the fabric.

[0032] Having sufficiently described the nature of the invention as well as a preferred embodiment thereof, it is hereby stated for pertinent purposes that the materials, shape, size and arrangement of the described elements may be modified provided that it does not entail an alteration of the essential features of the invention that are claimed below.

Claims

1. A fabric with float stitch, **characterized in that** it comprises a fabric substrate made up of two yarns (1, 2) woven with one another, and a third yarn (3) oriented in the vertical direction of manufacture of the fabric substrate, which third yarn (3) is not part of the fabric substrate (1, 2) and is anchored to said fabric substrate in several stitching points or points spaced from one another by a varying degree in at least said vertical direction of manufacture, said third yarn (3) being loose between the points for anchoring to the fabric substrate and said third yarn (3) on one of the faces of the fabric substrate making up several float stitches of any predetermined length.
2. The fabric according to claim 1, **characterized in that** the points for anchoring the third yarn (3), making up the float stitches, to the fabric substrate are aligned in the vertical direction or direction of manufacture of the fabric substrate, forming vertical stitches.
3. The fabric according to claim 1, **characterized in that** the points for anchoring the third yarn (3), mak-

ing up the float stitches, to fabric substrate are spaced from one another both in the vertical direction or direction of manufacture of the fabric substrate, and in the lateral direction, said third yarn (3) forming diagonal stitches.

4. The fabric according to claim 1, **characterized in that** the points for anchoring the third yarn (3), making up the float stitches, to the fabric substrate (1, 2) are spaced from one another in the vertical direction or direction of manufacture of the fabric substrate and in an alternating manner, in the horizontal or lateral direction, said third yarn forming stitches in zigzag. 10
5. A method for making the fabric with float stitch of the preceding claims in a warp machine, **characterized in that** it comprises making a fabric substrate in a conventional warp machine, without special sinkers, or special needles, or special positions, by means of weaving two yarns (1, 2) with the intervention of a first group of needles of the machine, and forming the stitches on one face of the fabric by means of a third yarn (3), with the intervention of a second group of the needles of the warp machine, which do not work in making the fabric substrate and which anchor said third yarn (3) to the fabric substrate in points spaced from one another at least in the vertical direction or direction of manufacture of the fabric substrate, said third yarn (3) forming a float stitch in which said third yarn (3) is loose and separated from the fabric substrate between the points for the anchoring or attachment to said fabric substrate. 15 20 25 30
6. The method according to claim 5, **characterized in that** it comprises making the fabric with float stitch in a warp machine of any of the following gauges: 14, 16, 20, 24, 28, 32, 36, and 40, and, according to the gauge used with a greater or lesser yarn thickness, of counts comprised between 20 deniers and 400 deniers. 35 40
7. The method according to claim 5, **characterized in that** it comprises the use of yarns 100% of which are made up of the following materials: polyamide, polyester, cotton, polypropylene, acetate, elastomer; or of yarns made up of a combination of different percentages of any of said materials, said yarns being of any of the following types: monofilament, multifilament, microfiber, textured, dull, semi dull, ultra dull or bright yarns. 45 50
8. The method according to claim 5, **characterized in that** it comprises the initial anchoring of the float stitch to the fabric substrate in a specific needle of the second group of needles and the final anchoring thereof in the same needle of the warp machine. 55

9. The method according to claim 5, **characterized in that** it comprises the initial anchoring of the float stitch to the fabric substrate in a specific needle of the second group of needles and the final anchoring thereof in another different needle of said second group of needles of the warp machine.

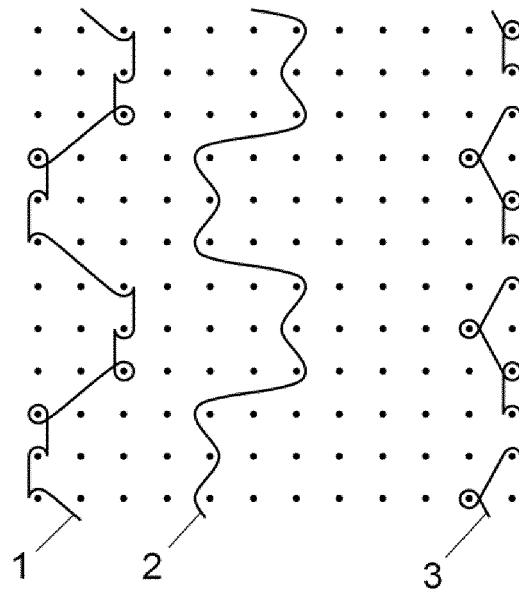


Fig. 1

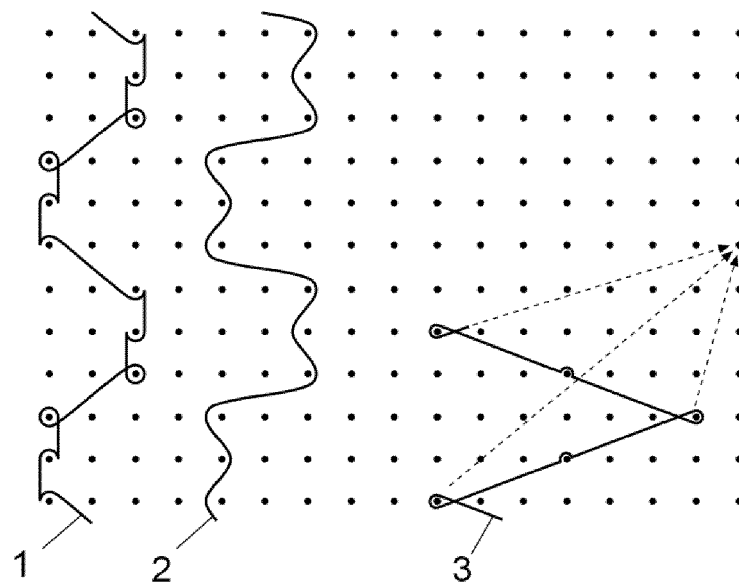


Fig. 2

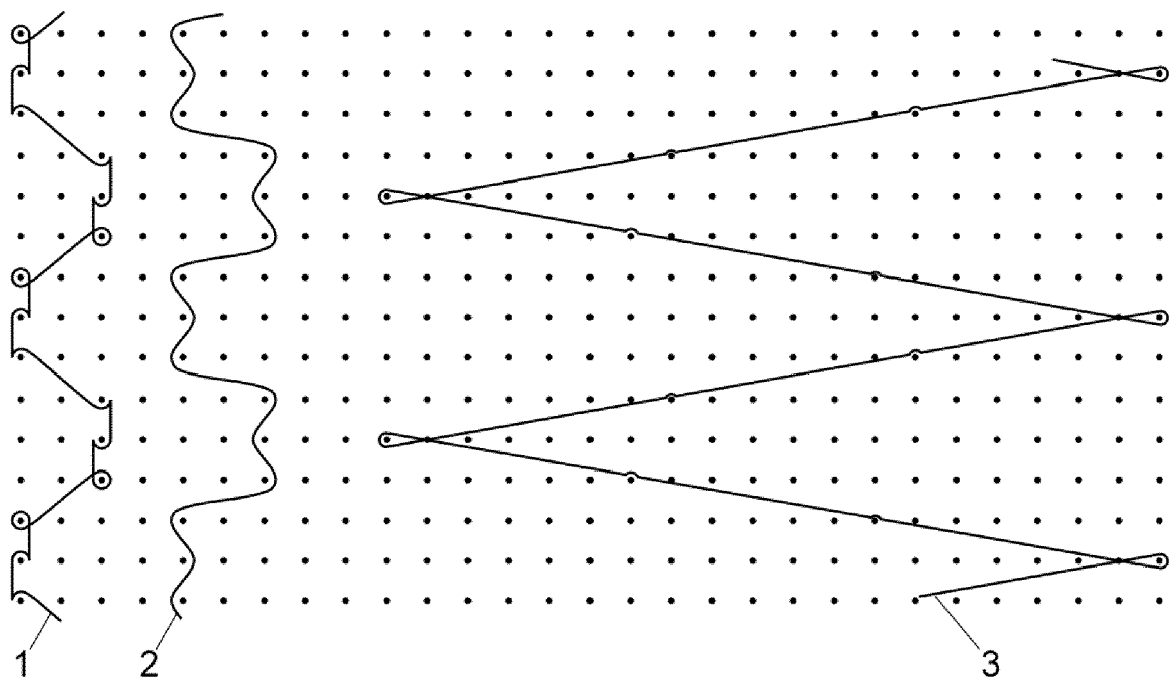


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 16 15 1511

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A	* page 1, line 15 - page 2, line 15; claims 1, 2, 7, 13, 14, 18-20, 25, 26; figures 1-3; examples 1-3 *	5,7,9	
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A	* column 3, line 66 - column 7, line 41; claims 3, 15, 16; figures 1-6 *	5-9	
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A	* column 3, line 36 - column 6, line 46; claims 1, 2, 8, 9; figure 1 *	5-7,9	TECHNICAL FIELDS SEARCHED (IPC) D04B
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 31 May 2017	Examiner Sterle, Dieter
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
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