(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 January 2016 (28.01.2016)

WIPO | PCT

(10) International Publication Number
WO 2016/013995 A1

(51) International Patent Classification:
D03D 1/00 (2006.01) *D03D 15/08* (2006.01)
D03D 13/00 (2006.01)

(21) International Application Number:
PCT/TR2014/000537

(22) International Filing Date:
30 December 2014 (30.12.2014)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2014/08671 22 July 2014 (22.07.2014) TR

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to the identity of the inventor (Rule 4.17(i))*

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

Published:

— *with international search report (Art. 21(3))*

(54) Title: FLAT OVER DYE DENIM FABRIC

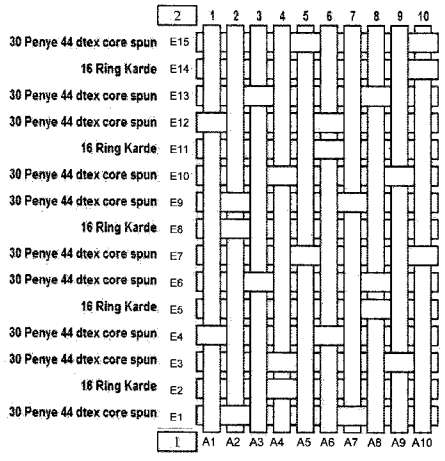

Figure 1

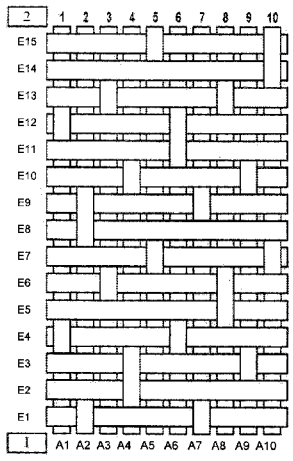

Figure 2

(57) Abstract: The present invention is related to fabrics which are named denim or blue jeans, wherein it is characterized with at least one warp yarn (1) dyed in warp or rope, rigid/straight weft yarns (2) and/or elastomeric weft yarns (2), at least one rigid/straight yarn aligned behind/over the warps to form the upper and lower portions according to the determined shape as wicker, rigid/straight yarns extends over at least one elastomeric yarn, the warp and weft yams (1, 2) formed according to the determined template/pattern which the weaving process is performed in determined frequency, extending to Iopps, warp and weft yarns (1, 2) and/or warp yarns (1) passing from the loop portion which the ratio of average number to the warp density is between 1 and 1.0 and/or the warp yarn (1) which the density value before shrinking is about 20-60 warp yarn/cm and/or the weft yarn (2) which the weft density is about 28-80 yarns/cm after weaving, before shrinking.

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DESCRIPTION
FLAT OVER DYE DENIM FABRIC

Technical Field

The present invention is related to denim or fabrics which are called blue jeans.

The invention is particularly related to the denim fabric obtained by the arrangements of the weft and warp and the meshes provided to be similar to tricot or towel, and thus relates to denim fabric which appearance and wear comfort are obtained. With this product, many advantageous features such as wear comfort, flexibility, double layer fabric feature such as tricot or towel-looking, prevention of contact of indigo dyed yarn with the skin or other clothing, freeness, comfort, etc. are provided.

Description of the state of the art

Denim or blue jeans termed fabric, with a general description are the fabrics woven in various meshes from the yarn made of cotton, polyester, nylon, viscose, lycra and of various unit weight and the warp yarn is dyed blue indigo and the weft undyed (raw).

The Denim name comes from South France, Rhone Valley, the "Tissu de Nimes", the Blue jeans name comes from Itailan Riviera, the "Blue de Genes" expressions.

The diversity of demand in the 1950s, and 1960s, evoked the manufacturers in different washing techniques and the colors that can be applied to denim. At the end of the 1980s, formfitting, lycra skinny jeans made from denim fabric began to spread. Jeans being popular in all segments pushed haute couture creators in new studies. Yves Saint Laurent, took the jeans to the podium in 1970. Designers such as Calvin Klein, Armani, and Valentino followed him.

Blue Jeans are produced from denim fabric dyed with indigo. Jeans become ready to be packed after the cutting, sewing, washing, rinsing, drying, and ironing processes. Washing, which is one of the most important in these processes, gives different colors and effects to the fabric. According to the desired effect to be obtained, jeans undergo various treatments after pre-washing

Indigo is the dyestuff produced from the leaves of the "indigofera tinctoria" plant. Indigo, the utilization of which dates back to 1600 BC, was found in India, Indonesia, China and Africa. The blue indigo has gray, green, and red tones. Paint manufacturers are making attempts in different colors with the indigo dye properties. However the attempts that have been made so far failed, fading of color could not be provided and fiber penetration has not been blocked. Since indigo does not penetrate into the yarn at once, immersion of the yarn into an indigo tank is repeated until the desired tone is obtained. The more the immersion is repeated the darker the color obtained. After the dyeing process, the defunct dyestuff is removed from the yarn by using washing techniques.

First, the fabric is cleansed for the required materials for weaving and ready-made clothing. After that it is washed with pumice stone until the desired color is obtained. This stone has an abrasive effect on the fabric and has an antiadhesive effect for color to stick onto the fabric again. In the following step, the contrast between blue and white is reduced by using chemical processes. In the bleaching process, the chemicals used are increased and the color changes to blue ice. In addition, in the "rodeo" stage, bleaching of certain regions is provided by spraying in private cabins.

In the Japanese patent application of JP19930131162 in 1993, a denim fabric and a solution related to its production is described. However an elastic solution providing comfort for the user in wearing is needed.

Description of the objects of the Invention

The object of the invention starting from the state of the art, is the development of a new 7749 flat/over dye denim fabric in which the existing disadvantages of the structure are removed.

Another object of the invention is to develop a fabric providing comfort for the user in clothing.

Another object of the invention is to provide the healthy use of jeans due to the flexible formfitting fabric.

Another object of the invention is to provide comfort, elasticity, prevention of contact

of indigo-dyed fabric to skin or other clothes due to the double-layer cloth feature being tricot or towel-looking and to provide freeness and comfort.

Another object of the invention is the developed denim fabric is able to be used on clothing such as pants, shirts, coat etc.

Another object of the invention is the formation of meshes similar to tricot or towel due to the layout of the warp and wefts, hence the desired appearance and expected cloth comfort of fabric to be obtained. The most common fabric pattern design used in denim is classic 3/1 Z twill. In the present invention tricot fabric patterns close to the classic front view 3/1 Z twill view are also seen.

In order to achieve the above objects, a new denim fabric has been developed.

Description of figures

Figure-1; is a drawing of the front view of the fabric weave report of a representative application of the invention.

Figure-2; is a drawing of the back view of the fabric weave report of representative application of the present invention.

Figure-3; is a drawing of the knitting pattern in a representative application of the invention.

Figure-4; is the drawing containing the knitting structure in a representative application of the invention

Reference Numbers

1	Warp yarn	X	Warp yarn on top
2	Weft yarn	•	Weft yarn on top

Detailed Description of the Invention

The formation of loops arising from the layout of the warp yarn (1) and weft threads (2) and that is analogous to tricot or towel and thus the appearance of the fabric

occurring in this way and comfortable clothing is provided in our inventive denim fabric.

As shown in Figure-1 and Figure-2, it is the front and rear view of the unit knitting report (pattern) of the inventive fabric. In the unit report 10 warp yarns (1) and 15 weft yarns (2) conduct differently. E1, E2, E3 ... represents weft yarn (2) in woven fabric. A1, A2, A3 ... represents warp yarn (1) in woven fabric. The warp yarn (1) is comprised of 3610 string 20 combed cotton slub 100% cotton yarns. Whole warp string count is 7220. The warp yarn are dyed by using deep blue indigo and sulphur dye mixtures in warp dyeing machine and are brought into the weaving after slushing. The weft yarn (2) are comprised of 2, 30 combed cotton 44 dtex Core Spun (3.5 elastane inflected) and 1, 16 ring carded yarn.

The Flat process is performed on the woven raw fabric in the finishing process (fabric brushing, burning, caustic washing, neutralization, drying, sizing, and finishing and non-shrink finish operations). The warp density for the comb: 37.5 ±2 counts/cm, mechanically woven fabric weft density: 33 ±2 counts/cm, raw cloth weft density: 34 ±2 counts/cm, finished fabric weft density: 39 ±2 counts/cm, finished fabric weight: 9.5 ±0.5 oz/sqyd, 3 x 60°C (3 times at 60°C) washed fabric weight: 11.0 ±0.6 oz/sqyd, finished fabric width: 130 ±3 cm, 3 x 60°C (3 times at 60°C) Washed fabric elasticity: 40 ±4 %. Due to the fabric structure, there is stretching in weft direction and transverse direction as in tricot knitted fabric. Yarn counts, fiber types, weft or warp density, color or unshrinkability may be varied to be unlimited with finishing.

The type name is 7749 Flat with this process. If this fabric is applied over dye, it is applied in washing step in finishing or later by using various textile dyes (sulphur, indigo etc.). The type name is 7749 over dye with this process. Here color and finishing processes can be diversified unlimitedly.

As shown in Figure-1 and Figure-2, in the 1st step, the warps numbered A1 - A3 - A4 - A5 - A6 - A8 - A9 - A10 are above, - A2 - A7 are below, E1 weft is hitched on 30 combed cotton 44 dtex core spun. In the 2nd step, the warps A1 - A2 - A3 - A5 - A6 - A7 - A8 - A9 - A10 are above, the warp - A4 is below, E2 weft is filled on 16 Ring carded weft. In the 3rd step, the warps A1 - A2 - A3 - A5 - A6 - A7 - A8 - A10 are above, the - A4 - A9 are below, E3 weft is filled on 30 combed cotton 44 dtex core

spun weft. In the 4th step, A2 - A3 - A4 - A5 - A7 - A8 - A9 - A10 are above, the warps - A1 - A6 are below, E4 weft is filled on 30 combed cotton 44 dtex core spun weft. In the 5th step, the warps A1 - A2 - A3 - A4 - A5 - A6 - A7 - A9 - A10 are above, the - A8 warp is below, E5 weft is filled on 16 Ring carded weft. In the 6th step, the warps A1 - A2 - A4 - A5 - A6 - A7 - A9 - A10 are above, the warps - A3 - A8 are below, E6 weft is filled on 30 combed cotton 44 dtex core spun weft. In the 7th step, the warps A1 - A2 - A3 - A4 - A6 - A7 - A8 - A9 are above, the warps - A5 - A10 are below, the weft E7 is filled on 30 combed cotton 44 dtex core spun weft. In the 8th step, the warps A1 - A3 - A4 - A5 - A6 - A7 - A8 - A9 - A10 are above, the warp - A2 is below, the weft E8 is filled on 16 Ring carded weft. In the 9th, the warps A1 - A3 - A4 - A5 - A6 - A8 - A9 - A10 are above, the warps - A2 - A7 are below, the weft A9 is filled on 30 combed cotton 44 dtex core spun weft. In the 10th step, the warps A1 - A2 - A3 - A5 - A6 - A7 - A8 - A10 are above, the warps - A4 - A9 are below, the weft E10 is filled on 30 combed cotton 44 dtex core spun weft. In the 11th step, the warps A1 - A2 - A3 - A4 - A5 - A7 - A8 - A9 - A10 are above, the warp - C6 is below, the weft E11 is filled on 16 Ring carded weft. In the 12th step, the warps A2 - A3 - A4 - A5 - A7 - A8 - A9 - A10 are above, the warps - A1 - A6 are below, the weft E12 is filled on 30 combed cotton 44 dtex core spun weft. In the 13th step, the warps A1 - A2 - A4 - A5 - A6 A7 - A9 - A10 are above, the warps - A3 - A8 are below, and the weft E13 is filled on 30 combed cotton 44 dtex core spun weft. In the 14th, the warps A1 - A2 - A3 - A4 - A5 - A6 - A7 - A8 - A9 are above, the warp - A10 is below, the weft E14 is filled on 16 Ring carded weft. In the 15th step, the warps A1 - A2 - A3 - A4 - A6 - A7 - A8 - A9 are above, the warps - A5 - A10 are below, the weft E15 is filled on 30 combed cotton 44 dtex core spun weft.

As shown on Figure-3,

Warp: 20 Combed cotton slub + 20 Combed cotton,

Weft 1: 16 Ring Carded,

Weft 2: 30 Combed cotton 44 dtex Core Spun (3.5 elastane inflected)

Warp density: 37.5 counts/cm comb density,

Warp density: 34 counts/cm in raw cotton. 39 counts/cm ready fabric is given.

As shown in Figure-4, the loop appearance formed by passing the weft yarn (2), warp yarn (1), warp-weft yarn (1, 2) connection, rigid/straight weft yarn (2) under many warp yarns (1) respectively, and the connection appearance of elastomeric warp yarn (1) connection with weft yarn (2) are given.

A denim fabric is comprised of a front face and a rear face. It is comprised of weaving pattern in which the warp yarn (1) and the weft yarn (2) woven together (Figure-1, 2, and 3).

The warp yarns (1) are indigo and/or sulphur dyed. The weft yarn (2) is comprised of at least one straight/rigid weft and/or an elastomeric weft.

In the example shown in Figure-1 and Figure-2, two elastomeric weft yarn (2) are aligned with one rigid/straight yarn. However the yarns can be aligned in different forms without going beyond the concept.

The ratio of elastomeric yarn to rigid/straight yarn may be such as 2:1 or 1:2. 1:3 or 3:1 etc. may be preferred. The ratio of the yarn does not have to be regular or be the same throughout the fabric.

The weaving of the fabric is as from the bottom of the warp yarn (1) to top. The bottom parts are shaped by the rigid/straight yarn pass behind its warp and is described as a loop. The loop formation is shown in Figure-3 and Figure-4. The upper parts are shaped by the rigid/straight yarn pass over its warp and are described as connected parts. The warp yarns are defined as on top (X) and the weft yarn on top (.).

The count of warp yarn (1) can be preferred between 5-50 Ne (British Numbering System Delicacy Unit). The count, the color and the slub effect of the whole warp yarns which the loops pass through do not need to be same. The count of warp yarn passing through the loop is at least 5 Ne. The warp count may change without changing the concept.

The weft count which the rigid yarns pass from the rear surface should be at least 5. In the pattern shown in the figure, the loops pass below the 9 warp yarn and are passed over one warp yarn (1). The rigid/straight yarns (16 ring carded) pass below 9

warp yarn (1) and pass over one warp. This combination may be changed without ruining the concept.

According to the example in the figure, the loops of rigid/straight yarns are less stretched than the elastomeric weft yarns (2). The loops provide the fabric appearance as a woven fabric. If these loops are made from soft cotton yarns, a fabric having a soft and comfortable rear surface is produced. The other advantage of these loops on the rear surface of the fabric is to prevent contact of warp yarns (1) with the skin. This is important since the warp yarns (1) are indigo-dyed. If the indigo-dyed yarn contact to the wearers, the skin or clothing may be colored.

The loops extends to the weft and warp yarns (1, 2) in the transverse direction. Similarly the connection parts extend to the weft and warp yarns (2, 1) in the transverse direction. The rigid/straight yarns in the pattern may be more different than the elastomeric yarns. Together with the other types of the chosen pattern for elastomeric yarns, stretching in a transverse direction is allowed related to the weaving pattern and/or yarn choice and weft and warp yarns (2, 1).

Many benefits can be achieved using a cross pattern. First, when warp yarn is dyed with indigo, use of the cross pattern gives fabric the conventional denim woven appearance, and protects the fabric mesh approach and its feeling, includes more woven fabric property.

The other features defining the layout and arrangement of warp and weft yarns (1, 2) besides appearance, touch, stretching etc. of the fabric is the density of the warp threads (1) or weft threads (2) with one another.

The density of warp yarns (1) before shrinking is approximately between 20-60 warp yarn/cm. After the fabric has been processed and home washing, the preferred warp density is approximately 25-75 warp yarn/cm. The home washing is performed at 60°C, then dried and left conditioning for eight hours. These tests are performed according to ASTM D 3776/96 and BS 63302A techniques. However the warp density is preferred after weaving, it becomes approximately 25-70 warp yarn/cm (after 3 home washings) after shrinking. If more is desired, the warp density becomes 28-80 yarns/cm after weaving, and becomes 30-85 yarns/cm (after 3 home washings).

Generally the weft yarn (2) and warp yarn (1) density measurement are performed at 65% humidity (±5%) and 20°C (±2%) conditions.

We can define the weft density similar to warp density. After weaving, before shrinking, the weft density becomes 28-80 yarns/cm. It becomes 30-96 yarns/cm after 3 home washings. The preferred weft density after weaving, before shrinking is 35-85 yarns/cm. After 3 home washings, it is 40-90 yarns/cm. If more is required, it is 35-75 yarns/cm after weaving, before shrinking; and it is 40-80 yarns/cm after 3 home washings. The warp and weft density not only gives fabric behavior property to the fabric, but also brings in different weights.

In the particular embodiment, the ratio of the warp density passing through the loop portion to a warp density is approximately between 0.1 and 1.0. Also the ratio of warp yarns (1) passing through the loop portion to the average weft count is 1-25.

The other point is the weft and warp yarn (2, 1) thickness. Because the elastomeric yarns should be synthetic or Core spun. The fineness of synthetic yarn is defined as the denier fineness unit, the warp and weft yarns are defined with Ne. As shown in Figure-1, Figure-2 and Figure-3, the warp, the rigid weft and elastomeric weft yarns (2) may have different thicknesses and elastomeric yarns may have a smaller thickness than rigid/straight yarns.

In the example the warp yarn number is preferred between Ne 5 - Ne 50. In the example the rigid/straight yarns are preferred Ne 8 - Ne 80. In the example the elastomeric yarns may be preferred between about 15 - 50 Ne or 40 - 200 denier. If desired, 60 - 100 denier may be chosen. We may provide various advantages choosing the yarn thicknesses in the original concept. For example if the thickness of the rigid/straight yarn is greater than that of the elastomeric yarn, we hide the loop portions better and reduce its being felt. Choosing the correct yarn thickness affects the sensing of the fabric as conventional denim or a woven fabric and the weight property, shrinkage values etc.

Figure-1 and Figure-2 are two perspective of the original concept. The fabric can be considered as having two weavings. The first weaving is generally comprised of being firmly woven from warp yarns (1) and elastomeric weft (2) from the front surface of the fabric. The second weaving is comprised of generally of rear surface

and warp yarns (1) and firmly woven rigid weft yarns (2). This rigid weft yarns (2) is comprised of lower portion and upper portion. The lower portion is formed by the rigid weft yarn (2) passed behind the warp yarn (1). The upper portion is formed by the rigid weft yarn (2) over the warp yarn. As shown in the figure, each loop passes under 9 warps, but in a different example, this may change.

PROCESS STEPS:

Warp yarns (1):

The first step of the process is the warp yarn (1). This step may comprise the selection of the thickness or the density of the warp. Generally the choice is the indigo-dyed warp yarn (1). The shrinked warp yarns (1) are dyed in the form of warp or rope.

Rigid/straight warp yarns (2):

In this step the rigid/straight warp yarn (2) is provided. This step may comprise any aspect of the yarn. It is not limited to the fineness, the shrinkage ratio, elasticity, color, weft density, winding value, and fiber type etc. of the yarn.

Elastomeric weft yarns (2):

This step represents the step related to the weft yarn (2). This step may comprise any aspect of the yarn. It is not limited to the fineness, the shrinkage ratio, elasticity, elastane number, color, weft density, winding value, and fiber type etc. of the yarn.

Fabric, pattern:

This step is the determination of the template. The template is chosen, and at least one rigid/straight yarn, at least one elastomeric yarn is arranged. In order to comprise the alignment of the lower and upper portions, rigid/straight yarns pass behind/over the warps as wicker.

Weaving:

Weaving is performed using warp and weft yarns according to the determined template/pattern with the determined frequency.

Shrinkage and finishing processes of fabric:

This step is related to the shrinkage of the fabric after weaving. Elastomeric yarns shrink more with respect to rigid/straight yarns (to make the loop patterns with rigid/straight yarns on the lower portion). Shrinking occurs when the fabric is removed from the weaving loom. Besides, shrinking can be applied to the fabric during finishing. If the finishing process of the fabric is over dye in various colors, the finishing process comprise various dyeing and shrinking process steps.

A fabric has first waving and second weaving. First weaving is the front surface of the fabric and comprises warp yarn (1) and firmly woven elastomeric weft yarns (2) of the fabric and again is comprised of warp yarn (1) and loosely woven rigid yarn. The second weaving on the rear surface of the fabric covers the warp and elastomeric yarns, it is difficult to see and feel these yarns on the rear surface.

A woven fabric comprising weft and warp yarn (2, 1) in order to make the upper portion, the weft yarn (2) are extended on to the chosen warp yarn (1) and extended to the bottom from the adjacent yarn. The second weft yarn (2) has greater shrinking ration than the first weft yarns (2). The first weft yarns (2) has firmer knitting than the second weft yarns (2).

The fabric production method is as in Figure-1 and Figure-2. Here the unit report of the pattern is described according to the weft alignment. The unit report is applied on all warp and weft yarns (1, 2). The connection shapes of warp yarn (1) and weft yarn (2), side view and loop formation are shown in Figure-3 and Figure-4. The warp yarn are indicated on top as (X) and the weft yarn are indicated on top as (.). Here the connection of rigid weft or elastomeric weft warp yarns (1) are given to be an example.

In addition the fabric production comprises one of these applications: mercerize, caustic, over-dye coloring, bleaching, hand scraping, sandblasting, stone wash, printing, embroidery, brushing, grinding, etc. as further step comprises tailoring apparel.

Over dye denim fabric has been produced comprising at least one warp yarn (1)

dyed in warp or rope, rigid/straight weft yarns (2) and/or elastomeric weft yarns (2), at least one rigid/straight yarn align behind/over the warps to form the upper and lower portions according to the determined shape as wicker, rigid/straight yarns extends over at least one elastomeric yarn, the warp and weft yarns (1, 2) formed according to the determined template/pattern which the weaving process is performed in determined frequency, extending to loops, warp and weft yarns (1, 2) and/or warp yarns (1) passing from the loop portion which the ratio of average number to the warp density is between 1 and 1.0 and/or the warp yarn (1) which the density value before shrinking is about 20-60 warp yarn/cm and/or the weft yarn (2) which the weft density is about 28-80 yarns/cm after weaving, before shrinking.

It comprises the connection parts extending in a transverse direction to the warp and weft yarn (1, 2) allowing stretching in the transverse direction related to weft and warp yarn (2, 1).

The looser loops with respect to the weft yarn (2) that prevent the contact of the warp yarn (1) with the skin at the rear side of the fabric comprise the loops of the rigid/straight yarns providing the fabric to appear as a knitted fabric.

It comprises indigo and/or sulphur dyed warp yarn (1) between 5 and 50 Ne and weft yarn (2) comprised of at least one straight/rigid weft and/or an elastomeric weft. There is warp yarn (1), weft yarn (2), warp, weft yarn (1, 2) and many loops formed by rigid/straight yarn pass under the warp yarn (1).

It comprises warp density, 37.5 counts/cm comb density, 34 counts/cm in raw fabric, 39 counts/cm in ready fabric weft density.

It is comprised of the warp yarn (1) 3610 string 20 combed cotton and 3610 string 20 combed cotton slub 100% cotton threads with a total warp count of 7220 threads. It comprises 2 x 30 combed cotton 44 dtex Core Spun (3.5 elasthan inflected) and 1 x 16 ring carded weft yarns (2).

There are loops from the lower portion of the warp yarn (1) to the upper portion formed by passing behind the warp of the rigid/straight yarn.

Preparation of at least one warp yarn (1) dyed as warp or a rope,

- preparation of rigid/straight weft yarn (2) and/or elastomeric weft yarn

(2),

- in order to comprise the alignment of lower and upper portions, at least one rigid/straight yarns is passed behind/over the warps according to the template, as wicker,
- formation of connection parts which allow stretching in a transverse direction related to weft and warp yarn (2, 1) and extends to the weft and warp yarn (2, 1) in transverse direction,
- formation of the loops made by passing of warp yarn (1), weft yarn (2), warp, weft yarn (1, 2) connection and rigid/straight yarn under the warp yarn (1) respectively,
- weaving processing according to the determined template/pattern with warp and weft yarns in determined fequency,
- it comprises process steps such as mercerize, caustic, over-dye coloring, bleaching, hand scraping, sandblasting, stone wash, printing, embroidery, brushing, grinding.

CLAIMS

1. The present invention is related to denim known as denim or blue jeans wherein its characteristic is:

- an least one warp yarn (1) which is dyed as warp or rope,
- rigid/straight weft yarns (2) and/or elastomeric weft yarns (2),
- at least one rigid/straight yarn which is aligned behind/over warps to form the alignments of the lower and upper portions according to the determined template, rigid/straight yarns over at least one elastomeric yarns forming wicker
- warp and weft yarns (1, 2) formed according to the determined template/pattern which extends transversely to loops warps and weft yarns (1, 2) and/or
- the ratio of average number to the warp density of the warp yarn (1) passing from the loop portion is between 0.1 and 1.0,
- the warp yarns (1) which has the density of about 20-60 warp yarns/cm before shrinking and/or,
- it is characterized with flat or dye denim fabric which comprises weft yarns (2) of about 28-80 yarns yarns/cm after weaving,

2. It is flat or dyed denim fabric according to the Claim 1, wherein its characteristic is:

- to comprise connection parts extending transversely to warp and weft yarns (1, 2) and allows stretching transversely related to warp and weft yarns (1, 2).

3. It is flat or dyed denim fabric according to the Claim 1, wherein its characteristic is:

- to comprise loops to provide less stretch appearance with respect to elastomeric weft yarns (2) preventing contact of the warp yarn (1) with skin at the rear surface of the fabric and the loops provide appearance

like knitted fabric.

4. It is flat or dyed denim fabric according to the Claim 1, wherein its characteristic is:

   – to comprise indigo and/or sulphur dyed warp yarns (1) of 5 - 50 Ne.

5. It is flat or dyed denim fabric according to any of the claims above, wherein its characteristic is:

   – to comprise weft yarns (2) which are comprised of at least one rigid/straight weft and/or an elastomeric weft.

6. It is flat or dyed denim fabric according to the Claim 1, wherein its characteristic is;

   – to comprise loops made by passing of warp yarn (1), weft yarn (2), warp, weft yarn (1,2) connection and rigid/straight weft yarn (2) under the warp yarn (1) respectively.

7. It is flat or dyed denim fabric according to the Claim 1, wherein its characteristic is,

   – to comprise the warp density, 37.5 counts/cm comb density,

   – weft density, 34 counts/cm in raw fabric, 39 counts/cm in ready fabric.

8. It is flat or dyed denim fabric according to the Claim 1, wherein its characteristic is;

   – warp density for comb; 37.5 ±2 counts/cm, mechanic weaving fabric weft density;

   – 33 ±2 counts/cm raw cloth weft density,

   – 34 ±2 counts/cm finished fabric weft density;

   – 39 ±2 counts/cm, finished fabric weight: 9.5 ±0.5 oz/sqyd, 3 x 60°C (3 times at 60°C) washed fabric weight: 11.0 ±0.6 oz/sqyd, finished fabric width: 130 ±3 cm, 3 x 60°C (3 times at 60°C) Washed fabric elasticity: 40 ±4 %.

9. It is flat or dyed denim fabric according to the Claim 1, wherein its

characteristic is;

- 3610 string 20 combed cotton and 3610 string 20 combed cotton slub 100% cotton threads with a total warp count of 7220 threads.

10. It is flat or dyed denim fabric according to the Claim 1, wherein its characteristic is;

- to comprise 2 x 30 combed cotton 44 dtex Core Spun (3.5 elasthan inflected) and 1 x 16 ring carded weft yarns (2).

11. It is flat or dyed denim fabric according to the Claim 1, wherein its characteristic is;

- to comprise loops being shaped as by passing lower portion of warp yarn (1) to the upper portions pass behind the warp yarns of lower portions.

12. The invention relates to the manufacturing method of flat or dyed denim fabric according to the Claim 1, wherein its characteristic is:

- preparation of an least one warp yarn (1) which is dyed as warp or rope,
- preparation of rigid/straight weft yarns (2) and/or elastomeric weft yarns (2),
- at least one rigid/straight yarn which is aligned behind/over warps to form the alignments of the lower and upper portions according to the determined template, rigid/straight yarns over at least one elastomeric yarns forming wicker
- formation of connection parts which allow stretching in the transverse direction related to weft and warp yarn (2, 1) and extends to weft and warp yarn (2, 1) in the transverse direction,
- formation of the loops made by passing of warp yarn (1), weft yarn (2), warp, weft yarn (1,2) connection and rigid/straight weft yarn under the warp yarn (1) respectively,
- weaving processing according to the determined template/pattern with

warp and weft yarns in a determined density,

– it comprises process steps such as mercerize, caustic, over-dye coloring, bleaching, hand scraping, sandblasting, stone wash, printing, embroidery, brushing, and grinding.

5

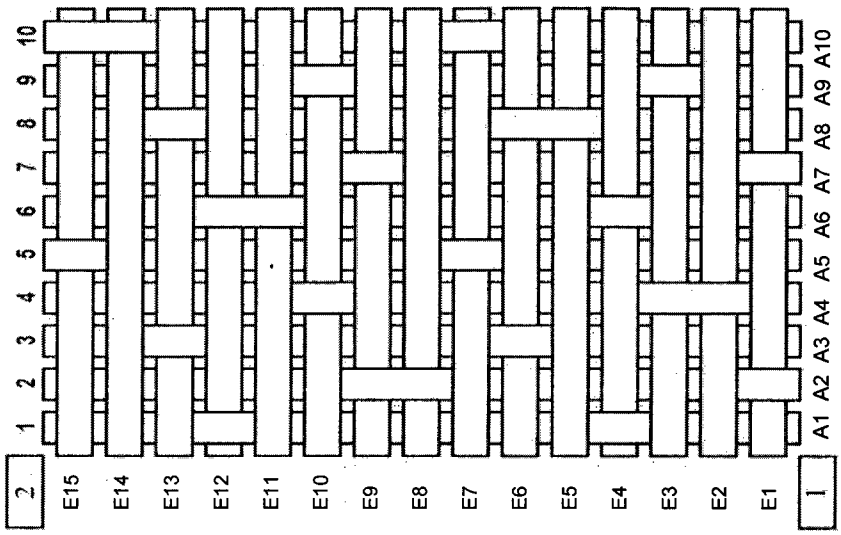

Figure 2

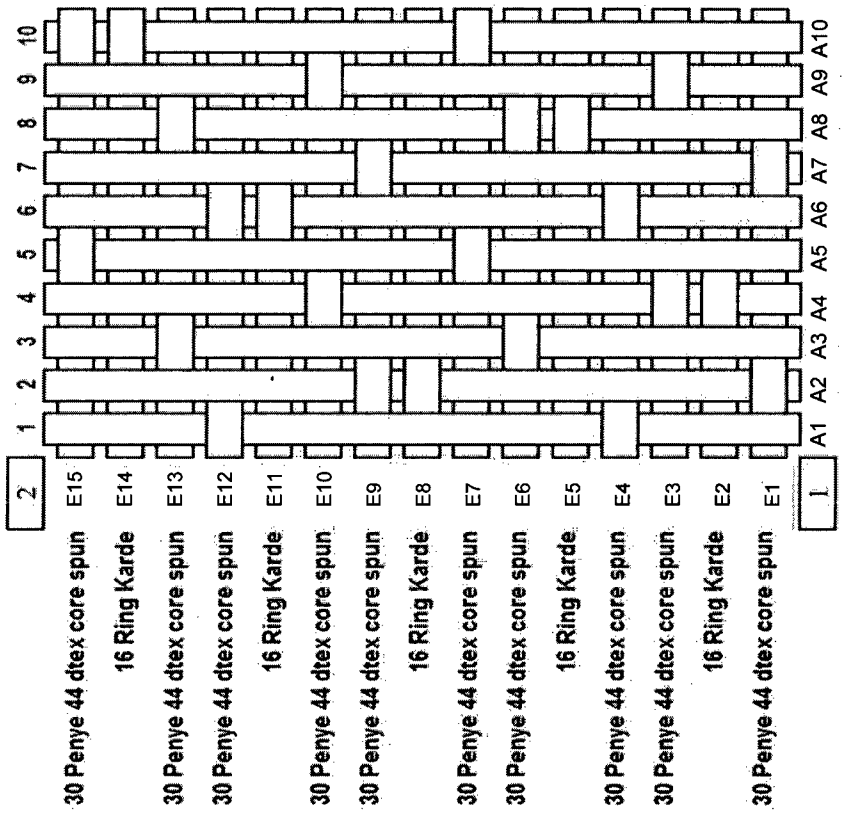

Figure 1

15	30 Combed cotton 44 dtex core spun	X	X	X	X	.	X	X	X	X	.	30 Combed cotton 44 dtex core spun
14	16 Ring carded	X	X	X	X	X	X	X	X	X	.	16 Ring carded
13	30 Combed cotton 44 dtex core spun	X	X	.	X	X	X	X	.	X	X	30 Combed cotton 44 dtex core spun
12	30 Combed cotton 44 dtex core spun	.	X	X	X	X	.	X	X	X	X	30 Combed cotton 44 dtex core spun
11	16 Ring carded	X	X	X	X	X	.	X	X	X	X	16 Ring carded
10	30 Combed cotton 44 dtex core spun	X	X	X	.	X	X	X	X	.	X	30 Combed cotton 44 dtex core spun
9	30 Combed cotton 44 dtex core spun	X	.	X	X	X	X	.	X	X	X	30 Combed cotton 44 dtex core spun
8	16 Ring carded	X	.	X	X	X	X	X	X	X	X	16 Ring carded
7	30 Combed cotton 44 dtex core spun	X	X	X	X	.	X	X	X	X	.	30 Combed cotton 44 dtex core spun
6	30 Combed cotton 44 dtex core spun	X	X	.	X	X	X	X	.	X	X	30 Combed cotton 44 dtex core spun
5	16 Ring carded	X	X	X	X	X	X	X	.	X	X	16 Ring carded
4	30 Combed cotton 44 dtex core spun	.	X	X	X	X	.	X	X	X	X	30 Combed cotton 44 dtex core spun
3	30 Combed cotton 44 dtex core spun	X	X	X	.	X	X	X	X	.	X	30 Combed cotton 44 dtex core spun
2	16 Ring carded	X	X	X	.	X	X	X	X	X	X	16 Ring carded
1	30 Combed cotton 44 dtex core spun	X	.	X	X	X	X	.	X	X	X	30 Combed cotton 44 dtex core spun
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	

Figure-3

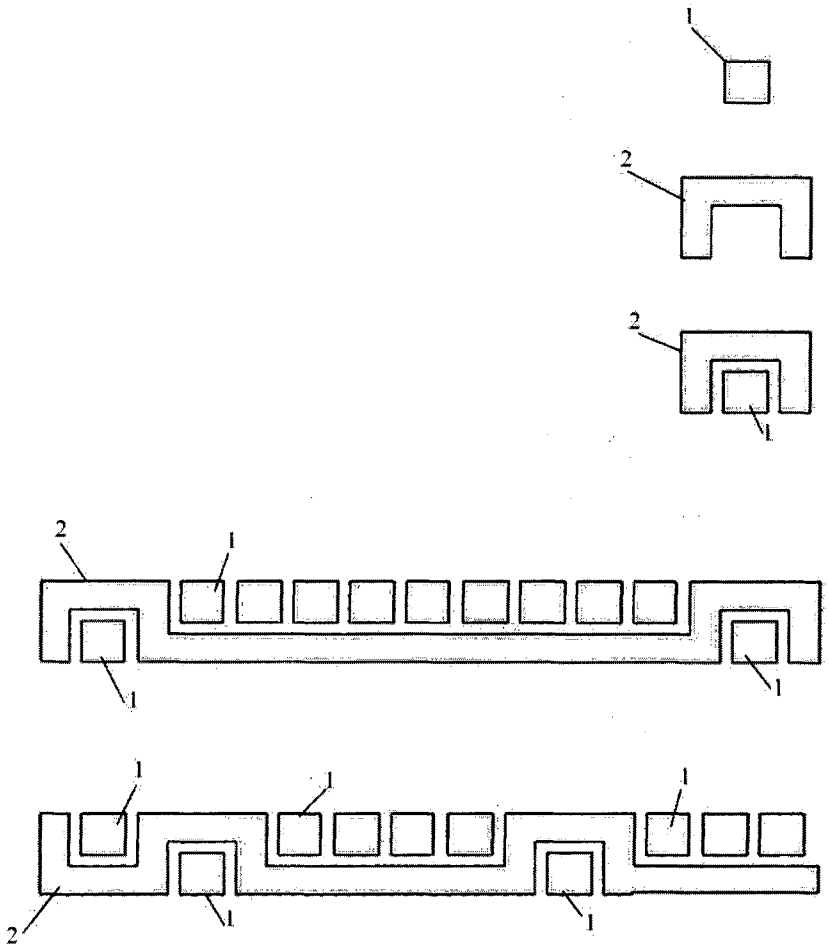

Figure-4

INTERNATIONAL SEARCH REPORT

International application No
PCT/TR2014/000537

A. CLASSIFICATION OF SUBJECT MATTER
INV. D03D1/00 D03D13/00 D03D15/08
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
D03D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2013/048140 A1 (YENICI HAMIT [TR] ET AL) 28 February 2013 (2013-02-28) paragraphs [0005] - [0015]; claims 1-45; figures 1-15	1-12
X	US 2011/212659 A1 (YENICI HAMIT [TR] ET AL) 1 September 2011 (2011-09-01) claims 1-43; figures 1-15	1-12

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 April 2015	04/05/2015

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Iamandi, Daniela

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/TR2014/000537

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