

(19)



(11)

EP 3 162 955 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
03.05.2017 Bulletin 2017/18

(51) Int Cl.:
D06Q 1/02 (2006.01) **D02G 3/28** (2006.01)
D02G 3/36 (2006.01) **D06L 1/00** (2017.01)
D06L 1/02 (2006.01) **D03D 15/00** (2006.01)
D06M 13/08 (2006.01) **D06M 23/10** (2006.01)

(21) Application number: **16196449.9**

(22) Date of filing: **28.10.2016**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
MA MD

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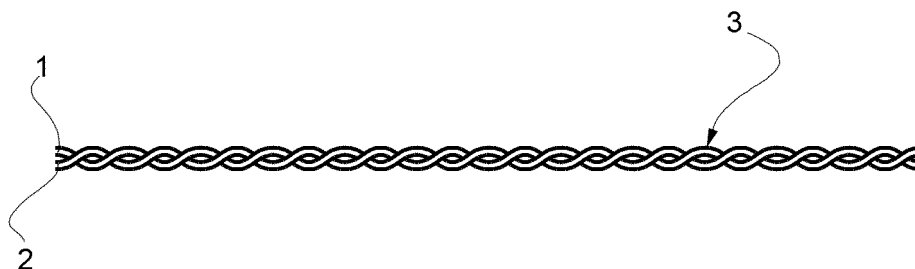
(30) Priority: **28.10.2015 IT UB20155104**

(54) **METHOD OF MAKING A YARN BASED ON A NATURAL FIBER AND A FABRIC MADE OF THIS YARN**

(57) The invention refers to a yarn (3) comprising a first thread or filament (1) and a second thread or filament (2), wherein the first thread comprises fibres of polyolefins, preferably polypropylene, and the second thread

comprises noble extra-fine natural fibres, like cashmere fibres, silk fibres and blends thereof, having a count between 50 dtex and 250 dtex, preferably between 85 dtex and 200 dtex.

FIG. 1



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Description

TECHNICAL FIELD

[0001] The present invention concerns a natural fibre-based yarn, the relative manufacturing method and the fabric comprising said yarn.

STATE OF THE ART

[0002] As is known, cashmere is a high quality fibre for the manufacture of textile articles, in particular for items of clothing.

[0003] In the pure state and at high counts, a cashmere yarn has such a low mechanical strength that automatic weaving is impossible.

[0004] For example, particularly fine yarns (count 50-250 dtex) have ultimate strength values lower than 80-100 g, which makes them unsuitable for industrial weaving.

[0005] In order to produce fabrics from a fine yarn of pure cashmere, it has been suggested, for example by EP1061162 and EP1967622, that a yarn formed of pure cashmere fibres is coupled with a synthetic reinforcement yarn made of a material that can be eliminated after weaving, by dissolution in an aqueous solution at acid pH maintained within a fairly high predefined temperature range, for example in the order of 80-100°C.

[0006] Said method entails the need to carry out a sequence of separate work processes, in which firstly two spinning operations are performed on the cashmere fibres and on the hydrosoluble synthetic fibres, to produce two distinct twist yarns (primary twisting). Only subsequently are said two yarns coupled by means of a "doubling" operation, after which a further twisting (secondary twisting) is performed on them, generally in the opposite direction (S) to the primary twisting direction (Z) of the cashmere yarn.

[0007] Fabrics are also produced from a "hybrid" yarn comprising a plurality of natural fibres and hydrosoluble synthetic fibres.

[0008] According to said method, natural fibres and hydrosoluble synthetic fibres are intimately juxtaposed, twisted and spun together to form a hybrid yarn. The latter can therefore be used for weaving, after which, as has already been described, the hydrosoluble synthetic portion of the yarn can be eliminated by dissolution in an aqueous solution, preferably having a slightly acid pH.

[0009] Also in this case, however, the method results in a non-uniform distribution of the cashmere fibres in the yarn which is then woven. Said distribution is the consequence of the intrinsically random arrangement of the fibres in the "blend" from which the yarn is obtained. For the same reasons, also the mechanical stress to which the different cashmere fibres are subject during the twisting is distributed among the fibres in a generally non-uniform manner, and this is then reflected in the characteristics of the finished fabric.

[0010] Furthermore, the yarns obtained do not allow an ideal colouring to be obtained since the aqueous solution at the temperature required for the dissolution causes many dyes to change colour, and the method is overall very expensive due to the high cost of the hydrosoluble yarn and the use of large quantities of water.

[0011] In this field, therefore, there is a need to identify alternative spinning methods which overcome the problems associated with the known solutions described previously and which allow in particular a uniform colouring of the yarn to be obtained.

SUMMARY OF THE INVENTION

[0012] The object of the present invention is therefore to provide a yarn based on a natural fibre, and in particular based on cashmere or silk fibres or blends thereof, and a method for the relative manufacturing, which meet the above-mentioned need in a simple inexpensive manner.

[0013] The above-mentioned object is achieved by the present invention, since it concerns a yarn as defined in claim 1. The present invention also concerns a method for manufacturing a fabric as defined in claim 9.

BRIEF DESCRIPTION OF THE FIGURES

[0014] For a better understanding of the present invention, it is described with reference to the figures of the accompanying drawings, in which:

- Figure 1 is a schematic view of a yarn according to the present invention; and
- Figure 2 is a schematic view of a fabric according to the present invention.

DETAILED DISCLOSURE OF THE INVENTION

[0015] A yarn of a so-called noble natural fibre and therefore containing for example cashmere or silk, having a count higher than 250 dtex, typically has mechanical properties which allow automatic weaving, without reinforcement elements such as other yarns coupled with it.

[0016] In the context of the present invention, reference is made to a yarn based on an extra-fine natural fibre that cannot be woven industrially, preferably a noble animal fibre, for example cashmere or silk. By said expression, we mean threads that form a yarn or thread having a count ranging from 50 dtex to 250 dtex, preferably from 85 dtex to 200 dtex, for which automatic weaving without a supporting element is mechanically impossible.

[0017] For example, the count of the cashmere yarn can be 140 dtex (70000 Nm).

[0018] Alternatively, the natural animal fibres, for example cashmere or silk, have ultimate strength values lower than 80-100 g.

[0019] According to an aspect of the present invention, threads 2 shown in figure 1 of extra-fine natural fibres

which cannot be woven industrially are coupled with interwoven threads or filaments 1 formed by fibres comprising polyolefins by means of a coupling method similar to the one described in the patent EP1061162.

[0020] Preferably the fibres comprising polyolefins consist mainly or over 50% of polyolefins.

[0021] Even more preferably the polyolefin fibres comprise at least one material selected from the group consisting of polyethylene, polypropylene or blends thereof.

[0022] Even more preferably the polyolefin fibres comprise polypropylene.

[0023] Even more preferably the polyolefin fibres are made of polypropylene.

[0024] Even more preferably the polypropylene has a count ranging from 50 to 150 dtex, in particular a count of dtex 85/30 is preferred, i.e. consisting of 30 interlaced filaments.

[0025] Preferably the percentage by weight of the fibres comprising polyolefins relative to the total weight of the fabric 4 is between 10 and 70%, more preferably between 20 and 50%, for example 30%.

[0026] The coupling process comprises, preferably but not exclusively, two separate spinning operations, to form a first thread 2 of extra-fine natural fibres which cannot be woven industrially and an interwoven filament or thread 1 formed of a plurality of filaments comprising polyolefins, where the interwoven filament is preferably extruded and preferably formed of a number of filaments ranging from 10 to 50, for example 30.

[0027] Subsequently the filament 1 comprising fibres comprising polyolefins and the thread 2 of natural fibres are coupled to form a yarn 3.

[0028] In particular, the filament or thread 1 comprising polyolefin fibres and the thread 2 of natural fibres are coupled by means of a "doubling" operation, after which they are given a further twisting (secondary twisting), generally in the opposite direction (S) with respect to the direction of primary twisting (Z) of the cashmere yarn.

[0029] The yarn 3 thus obtained can be subsequently used in a conventional weaving process to obtain a fabric 4.

[0030] The fabric 4 thus obtained can then undergo a dry cleaning operation.

[0031] Preferably the dry cleaning operation is performed with a solvent suitable for dissolving the polyolefin fibres.

[0032] More preferably the dry cleaning operation is performed with at least one substance selected from the group consisting of hydrocarbons, siloxanes, perchloroethylene also known as tetrachloroethylene, liquid carbon dioxide, siloxanes (other possible solvents?)

[0033] Even more preferably the dry cleaning operation is performed with perchloroethylene.

[0034] Preferably the dry cleaning operation is performed at a temperature higher than 100°, preferably between 100° and 150°C.

[0035] Even more preferably at a temperature between 110°C and 130°C, for example 120°C.

[0036] The presence of the fibres soluble by dry cleaning gives the yarn of the invention the necessary mechanical strength to withstand the stress associated with weaving, which would not be possible with a yarn formed only of extra-fine animal fibres.

[0037] Compared to the solutions known in the art, the method of the present invention entails reduced costs and less complexity in operating terms.

[0038] In particular, the method of the invention also avoids the risks connected with the use of hydrosoluble threads which are damaged by water and humidity and have therefore proved to be difficult to store and transport.

[0039] According to the method of the invention, on the other hand, the spinning performance of the cashmere is significantly increased, resulting in a much lower number of breakages.

[0040] Furthermore, the use of fibres comprising polyolefins and even more the use of fibres comprising polypropylene improves fixing of the colour and in particular does not damage the colour.

[0041] The invention will be described below with reference to a specific embodiment example without limiting the invention to it.

[0042] A yarn is formed by doubling a cashmere thread having count of 140 dtex with a filament having a count of 85/30 dtex formed by interweaving 30 filaments of polypropylene. The cashmere thread and the polypropylene filament are coupled to each other by twisting them in the opposite direction to the direction in which they had been individually spun.

[0043] The yarn 3 thus obtained is woven into fabric 4 and then dry-cleaned with perchloroethylene at 120°C thus entirely dissolving the polypropylene filaments.

[0044] This results in a strong cashmere fabric. The dry cleaning does not have a negative effect on the colours which are well defined, thus fully achieving the object of the invention.

Claims

1. Yarn (3) formed by a first thread or filament (1) and a second thread or filament (2) of natural fibres with a count between 50 and 250 dtex, **characterised in that** said first thread or filament (2) comprises polyolefin.
2. Yarn (3) according to claim 1, **characterised in that** said natural fibres have a count between 85 and 200 dtex.
3. Yarn (3) according to any one of the preceding claims, **characterised in that** said natural fibres are selected in the group consisting of cashmere fibres, silk fibres and blends thereof.
4. Yarn (3) according to any one of the preceding

claims, **characterised in that** said polyolefins comprise at least one substance selected in the group consisting of polyethylene, polypropylene and blends thereof.

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5. Yarn (3) according to any one of the preceding claims, **characterised in that** said first thread or filament (1) is polypropylene.
6. Yarn (3) according to claim 5, **characterised in that** said polypropylene has a count between 50 and 150 dtex. 10
7. Yarn (3) according to any one of the preceding claims, **characterised in that** said fibres comprising polyolefin are between 20 and 50% by weight of the final yarn. 15
8. Method for making a yarn (3) comprising the steps of coupling a yarn formed by a first thread or filament (1) and a second thread or filament (2) of natural fibres with a count between 50 and 250 dtex, **characterised in that** said first thread or filament (1) comprises polyolefin. 20
9. Method for making a fabric (4) comprising the steps of: 25
 - a) industrially weaving a yarn (3) according to any of claims 1 to 7; 30
 - b) dissolving said fibres comprising polyolefin with dry cleaning.
10. Method according to claim 9, **characterised in that** said dry cleaning takes place with a solvent selected in the group consisting of hydrocarbons, siloxanes, perchloroethylene, liquid carbon dioxide, siloxanes. 35

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FIG. 1

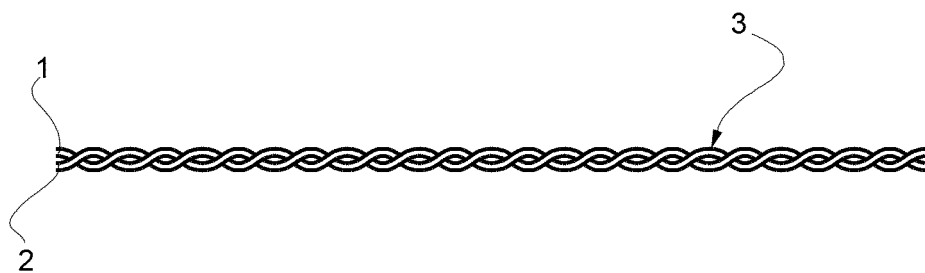
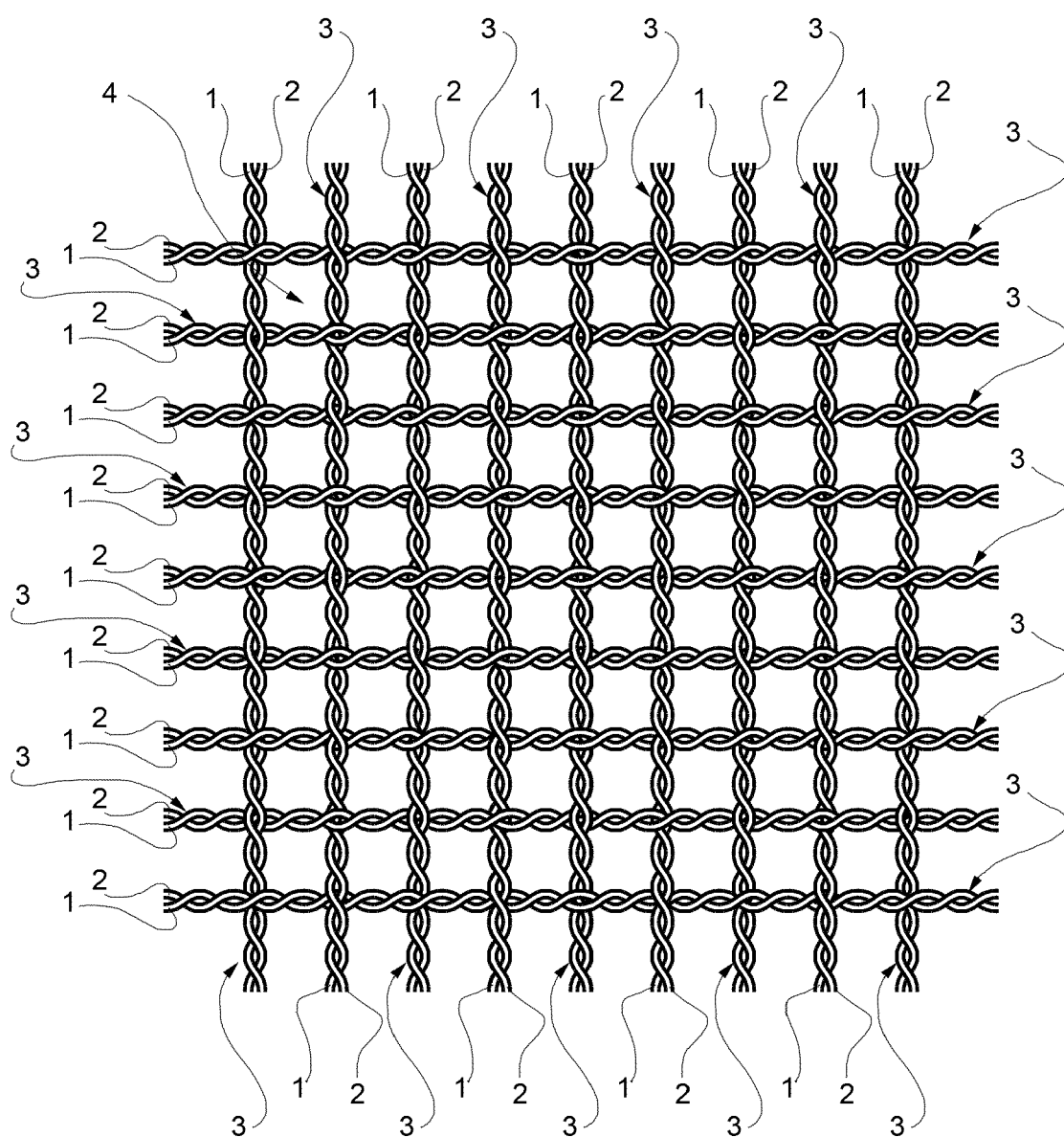


FIG. 2





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Application Number
EP 16 19 6449

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Place of search The Hague		Date of completion of the search 17 February 2017	Examiner Barathe, Rainier
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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