Fabric strap with an emulated velvet surface, including a base fabric weaved with weft yarns and warp yarns and a pile layer made of draw textured yarns on a surface of the base fabric in a form of curled hairs.
FIG. 5

cycle direction

head frame direction

yarn pattern of the pile
framework of basic fabric
yarn pattern of basic fabric

FIG. 6

FIG. 7
FABRIC STRAP WITH EMULATED VELVET SURFACE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority from CN Application No. 2013208091847, filed Dec. 11, 2013, the contents of which are incorporated herein in the entirety by reference.

FIELD OF THE INVENTION

The present invention relates to the field of fabricating fabric straps used in the garment industry. More particularly, it relates to a fabric strap with a velvet-like surface.

BACKGROUND OF THE INVENTION

Currently, fabric straps (or ribbon) is widely used in the textile industry and daily life, particularly, in the apparel manufacture. For example, for the underwear, straps used as the waistband are essential accessory materials. As the living standard improves, there are increased demands for better fabric handle, particular for fabric straps used in underwear articles. To meet such demands, the existing methods in the art include: the use of ultra-fine composite fibers, or longer floats on the surface or post-weaving step of adding a velvet-like surface. However, longer floats can cause snagging and pulling due to the friction with the skin, severely affecting the overall aesthetics of the clothing article. The post flocking step requires a difficult process and fastness of the flocking hair to the strap is not strong, and due to the cumbersome production process, this method has disadvantages of low efficiency, not conducive to automated production, and higher costs.

SUMMARY OF THE INVENTIONS

Accordingly, one object of the present invention is to provide a new type of fabric strap with an emulated velvet surface, characterized in that the flocking hair has strong fastness to base fabric, soft and delicate fabric handle, and the strap fabric is comfortable to touch with a beautiful and upscale visual appearance.

The fabric strap according to the present invention comprises a main layer (base fabric) and a flocking layer (the pile), which is disposed on the main layer. The flocking layer (cut pile) is formed after cutting the pile ends in between two layers of a fabric weaved with a face-to-face weaving technique.

The two layers of the fabric are weaved integrally on a shuttleless loom machine made by the Swiss company Muller. Basically, it is a pile weave process in which the warp ends used for the pile are inserted in a way that they form a vertical connection between the two layers of fabric. By cutting the pile ends in between the two layers, two separate pile strips are formed.

The face-to-face weaving technique is not new. However, it conventionally requires the use of fully drawn yarns (known as "FDY" in the art) for the pile. After cutting the pile, the pile hairs are straight and standing on the base fabric (with warps and wefts in the "V" form, as shown in FIG. 2. It is surprisingly found in the present invention that several advantageous effects occur if DTY as conventionally required and used for many years is replaced with draw textured yarns (known as "DTY" in the art). For example, after cutting, the pile hair made of DTY recoil and stick to the surface of the base fabric resulting a soft fluff layer. Furthermore, as the hairs curl closely around weft yarns of the base fabric and even get tangled among themselves, it increases the friction there between, making "hair loss" less likely.

Therefore, with the novel use of the DTY for the pile, the fabric strap of the present invention has a soft, more strongly fixed on the base fabric, which is soft, smooth and feels comfortable when in contact with the skin and at the same time has a upscale visual appearance.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages, and specific objects attained by its use, reference should be made to the drawings and the following description in which there are illustrated and described preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a diagram showing a view of the fabric strap of the present invention;

FIG. 2 is a diagram showing a view of the fabric made according to the prior art;

FIG. 3 shows the process of making two pieces of the fabric strap for the present invention from one fabric with two integrally woven layers.

FIG. 4 shows the weaving pattern of the fabric strap of the present invention (a is the left side and b is the right side, shown separately due to paper size limits).

FIG. 5 is a diagram showing the warp drafting plan.

FIG. 6 is a diagram showing a fabric strap of the present invention with a wave-shaped decorative trim.

FIG. 7 is a diagram showing a fabric strap of the present invention with a crown-shaped decorative trim.

DETAILED DESCRIPTION OF PARTICULAR EMBODIMENTS OF THE INVENTION

Embodiment I

In the following, the prevention invention is further described in conjunction with the drawings.

For this embodiment, the loom used is made by the Swiss company Muller, Model No. NF33 6-42. The detailed process of the embodiment are as follows:

1. Warping Preparation: The warps include the following yarns: base fabric yarns (x): 44/12/2 SD Nylon, 101 ends, on two warping beams; pile base yarns (X) 44/12/2 SD Nylon, 46 ends, on two warping beams; pile yarns (y): 33/3/4/2 SD Nylon, 37 ends, on one warping beam, and frame-work spandex yarns (C) 930 tex covered spandex yarn, 20 ends, on two warping beams. All yarns are pre-cut through the warping pan head for preparation.

2. Drafting: Pass all warps through the heald pole according to the warp arrangement order in the drafting plan as shown in FIG. 5.


4. Width: The nascent fabric: base width is 15.25 MM (millimeters) and overall width is 15.5 MM. The final product: base width is 12 MM and overall width is 14.5 MM.

5. Height of the pile: The pile has a height of 1.88 MM, with 8 filler pieces.
[0024] (6) Wefts: The upper wefts are 78/24 SD Nylon, the lower wefts are 78/24 SD Nylon, the upper lock stitch is 44/12/1 SD Nylon, and the lower lock stitch is 44/12/1 SD Nylon.

[0025] (7) Loom weaving patterns: as shown in FIG. 4, the base fabric has an upper layer which is woven with upper weft yarns (78/24 SD Nylon), upper warp yarns (44/12/2 SD Nylon), pile base yarns (44/12/2 SD Nylon), and framework spandex yarns (390 denier covered spandex yarn spandex), and a lower layer which is woven with lower weft yarns (78/24 SD Nylon), lower warp yarns (44/12/2 SD Nylon), pile base yarns (44/12/2 SD Nylon) and framework spandex yarns (390 denier covered spandex yarn spandex). The pile yarns (33/34/2 SD Nylon) is woven with both the upper layer and lower layer and form the pile after being cut in the middle between the upper and lower layers, as shown in FIG. 3. FIG. 4 (wherein 4a is the left side part and continues to 4b for the right part) indicates the weaving patterns for various yarns: the base fabric yarns (44/12/2 SD Nylon) are two upper/two lower, the pile base yarns (44/12/2 SD Nylon) are seven upper/one lower and one upper/seven lower, the framework spandex yarns are one upper/one lower, and the pile yarns (33/34/2 SD Nylon) are one upper/middle/one lower/one middle.

[0026] (8) Adjusting the height of the pile by changing the feeding speed of the pile yarns as well as the number of the filler pieces.

[0027] (9) Weft insertion and beating: the weft hook drives the weft yarns to traverse through the shed and the latch needle receives the weft or edge yarns. The length of the weft yarns passed through is set by the weft density adjusting gear. The reed swings back and forth, beating the weft yarn which has just passed through the shed to complete a weaving cycle.

[0028] (10) Cutting the pile yarns: a blade is running across in the width direction, cutting the pile yarns between the two layers of the newly formed fabric and resulting in two pieces of the strap of the present invention.

[0029] (11) Rolling: a rubber roller on the loom rolls up the newly formed fabric. The rolling speed is adjustable by a density adjustment device on the loom machine.


[0031] Preferably, the weave structures of the upper layer, lower layer and pile layer of the fabric strap of the present invention are shown in FIG. 5, which however is provided only as examples of, not limitations to, the present invention. Symbols in FIG. 5: x indicates that the warps are in the upper position; ▲ indicates that the warps are in the middle position and a blank indicates that the warps are in the lower position. The base fabric may use various weave structures, such as, three upper/one lower, five upper/one lower, seven lower/one upper, five lower/one upper, three lower/one upper, seven upper/one lower, two upper/two lower, and other similar structures. The pile layer may use various weave structures, such as, one upper/one middle/one lower, one upper/three middle/one lower, three upper/one middle/three lower, and the likes.

[0032] The strap of the present invention can have the pile either on the outer surface or inner surface. The base fabric can use nylon, spandex, polyester or other materials. According to the present invention, the pile layer must use the draw texturing yarn (DTY), which is has elasticity and is naturally curled. However, the materials for the pile can be nylon, polyester or other materials. Therefore, both the base fabric and the pile are not limited to specifications used in the embodiment described above, but can be changed by people of originally skill in the art according to the particular needs for the strap’s structure, thickness, width, strength and stretchability.

[0033] The fabric strap of the present invention can have an elastic base fabric or non-elastic base fabric. If using raw materials with high elastic coefficient, it will result in elastic strap and, conversely, if raw material of zero or close-to-zero elastic coefficient, it will result in non-elastic strap.

[0034] The fabric strap of the present invention can have a plain weave structure or a design pattern structure and, depending on the specific demand, it can have various decorative trims.

[0035] The density of the strap is determined by the user’s requirement for the weave structure and the stretchability.

**Embodiment II**

[0036] The fabric strap of the present invention can have decorative trims, such as a wave shape shown in FIG. 6 or a crown shape shown in FIG. 7. These decorative trims can make the fabric strap of the present invention more visually diversified and pleasant.

[0037] While there have been described and pointed out fundamental novel features of the invention as applied to a preferred embodiment thereof, it will be understood that various omissions and substitutions and changes, in the form and details of the embodiments illustrated, may be made by those skilled in the art without departing from the spirit of the invention. The invention is not limited by the embodiments described above which are presented as examples only but can be modified in various ways within the scope of protection defined by the appended claims.

What is claimed is:

1. A fabric strap, comprising a base fabric woven with weft yarns and warp yarns and a pile layer made of draw textured yarns on a surface of said base fabric in a form of curled hairs.

2. The fabric strap of claim 1, wherein said base fabric and said pile are integrally woven.

3. The fabric strap of claim 1, wherein said curled hairs are tangled among themselves.

4. The fabric strap of claim 1, wherein said base fabric comprises yarns made of a material selected from the group consisting of nylon, spandex, and polyester.

5. The fabric strap of claim 1, wherein said pile layer comprises yarns made of nylon or polyester.

6. The fabric strap of claim 1, further comprises a decorative trim.

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