United States Patent Office 3,550,226 Patented Dec. 29, 1970

3,550,226

METHOD OF WEAVING TERRY-LIKE FABRIC

Alexander Pachmann, Bahnstrasse 13,
Lohhof, near Munich, Germany

No Drawing. Filed June 3, 1968, Ser. No. 733,766
Claims priority, application Germany, June 2, 1967, A 55,878; Aug. 9, 1967, A 56,461; Nov. 28, 1967, A 57,507
Int. Cl. D06c 1/00; D03d 27/00, 27/08
U.S. Cl. 28—76 13 Claims

ABSTRACT OF THE DISCLOSURE

Method of weaving terry-like fabric wherein the warps are essentially non-elastic and are maintained under the same tension and the wefts contain at least some elastic crimp yarns which are stretched during weaving to the limit of their elastic extensibility, the fabric during weaving is maintained correspondingly wide, and the fabric is then washed if necessary.

This invention relates to a method of manufacturing fabrics, and more particularly to a method of weaving terry-like fabric on a loom.

Conventional terry fabrics are manufactured on terry looms by a process according to which successive warps are under different tensions, those threads under greater tension forming the ground fabric, and those under lower tension forming the terry pile. In this process, several weft or filling threads are introduced successively and are beaten up together on the actual selvage by changing the sley path. Pieces of loose warp extending over two or more wefts then form the burls which characterize terry fabrics.

Certain disadvantages are associated with terry fabrics manufactured according to the conventional technique. Thus, a particular disadvantage is that the loose pile threads can easily be drawn out; and if one burl is so drawn out, then other adjacent burls formed from the same pile thread are lost and the fabric is defective. A single drawn-out pile thread in a terry cloth towel is, for example, sufficient to degrate the towel to a second.

Accordingly, I have conceived by my invention a simple method of manufacturing terry fabric, or a terry-like fabric, on a loom whereby the foregoing difficulties and disadvantages are obviated and the fabric produced is resistant to drawing out.

Thus, in essence I propose, according to my invention, to utilize warps which are essentially non-elastic threads arranged at a distance of at least 2 mm., but not more than 5 mm., from each other; that the warps are maintained at approximately the same tension; that the wefts interspersing the warp groups are at least partially yarns containing crimp yarns which, during weaving, are stretched to the limit of their conditioned elastic extensibility; that the resulting fabric, during weaving, is kept correspondingly wide; and that when weaving is completed, the fabric can, if required, undergo a washing process. After weaving, if fabric is released from the loom temple, the crimp yarns which have been stretched counter to their crimping tendency tend to crimp; but this crimping can only occur between the successive warps arranged in groups, whereby the binding together of warp and weft takes place in cotton linen, twill or other short-float weaves. If crimping does not occur immediately upon removal from the loom temple, it occurs if the fabric is subsequently subjected to a tension-less washing and drying process.

The temperature of the washing liquor used during the washing process causes, according to the type and strength of the crimp yarns used, a rebound or recovery

tendency resulting in a more or less pronounced terry effect. Generally, however, the terry effect is obtained at a washing liquor temperature of approximately 60° C. and a treatment time of about 30 minutes.

The same effect can also be obtained with a tensionless steaming and drying arrangement using wet steam, with a very short treatment time, but at higher temperatures. Both methods result in a fixation of the terry effect which can only be reduced by stretching the fabric. However, as soon as the tension is removed, it returns to its original state in a very short time and at the latest after the influence of moisture.

Crimp yarns which have been found to be particularly suitable are those manufactured by Heberlein & Co. A.G., Wattwil, Switzerland, and its licensees under the trademark Helanca. They are manufactured from endless, originally smooth nylon yarns or the like. During manufacture the nylon yarns are high twisted, whereafter the twist is thermoset and, if necessary, back twisted beyond the zero point and finally two counter-twisted yarns are plied together.

In addition to the above-mentioned crimp yarns others can be used which have been crimped by using intermeshing toothed rollers, a stuffing box or by drawing off over a sharp edge. Possible raw materials for the crimp yarns to be used according to the invention are polyamide, polyester, polyacrylonitrile and polypropylene.

According to a preferred embodiment of the process, ply yarns or doubled yarns made of cotton yarn, worsted yarn or yarns from other vegetable and animal fibres, as well as yarns of semi- or completely synthetic fibres are used in the weft, the proportion of crimp yarn amounting to between 22 and 35% by weight, whilst the yarns made of vegetable and animal fibres, together with semi- and completely synthetic fibres amount to 65–78% by weight.

Furthermore, the warp threads can be preferably in groups of 2–10 threads, with a distance between each group of at least 2 mm., but not more than 5 mm. The warp threads are preferably of cotton, but can also be of other vegetable or animal semi- and completely synthetic fibres.

It has also been found that the described method can be performed with any other elastic yarn. Elastic yarns, within the meaning of the invention, are understood to be those yarns which have an elastic extensibility of at least 20% and preferably at least 50%.

Examples of such elastic yarns are overtwisted or overplied yarns on a basis of animal, vegetable, semi-synthetic or completely synthetic fibres, the elasticity of which depends on the overtwisting or overplying; and elastomer yarns, the elasticity of which depends on the characteristics of the materials used for their manufacture; as well as ply yarns made of shrunk and unshrunk synthetic yarns. It is also advantageous in certain cases in order to modify the characteristics of the finished fabric to alternate other threads with the weft yarns which are carried by the elastic weft with burl formation in the finished fabric.

From the foregoing description, it will be seen that I contribute by my invention a simple method of weaving on a loom a terry or terry-like fabric which is resistant to drawing out of the burls.

I believe that the operation of my novel process will now be understood and that the advantages thereof will be fully appreciated by those persons skilled in the art.

I claim:

1. Method for the manufacture on a loom of a fabric having a terry-like appearance, characterized in that the wraps used are essentially non-extensible threads arranged at a distance of at least 2 mm. and not more than 5 mm. from each other, that said warps are maintained at approximately the same tension, that the wefts are at least partly yarns containing elastic crimp yarns which during

weaving are stretched to the limit of their texture-conditioned elastic extensibility, that the resulting fabric during weaving is maintained correspondingly wide, so that loops are formed only in the wefts.

2. Method according to claim 1, characterized in that upon completion of weaving, the fabric undergoes a washing process.

3. Method according to claim 1, characterized in that the warp yarns are arranged in groups of 2–10 threads, with a distance between each group of at least 2 but not more than 5 mm.

4. Method according to claim 1, characterized in that the warps are of cotton.

5. Method for the manufacture on a loom of a fabric having a terry-like appearance, characterized in that the warps used are essentially non-extensible threads arranged at a distance of at least 2 mm. and not more than 5 mm. from each other, that said warps are maintained at approximately the same tension, that the wefts comprise approximately 22–35% synthetic crimp yarns and approximately 65–78% yarns of vegetable, animal, semi- or completely synthetic fibrous materials which during weaving are stretched to the limit of their texture-conditioned elastic extensibility, that the resulting fabric during weaving is maintained correspondingly wide, so that loops are formed only in the wefts.

6. Method according to claim 5, characterized in that the wefts are ply yarns.

7. Method according to claim 5, characterized in that the wefts are doubled yarns.

8. Method according to claim 5, characterized in that upon completion of weaving, the fabric undergoes a washing process.

9. Method for the manufacture on a loom of a fabric having a terry-like appearance, characterized in that the warps used are essentially non-extensible threads arranged at a distance of at least 2 mm. and not more than 5 mm. from each other, that said warps are maintained at approximately the same tension, that the wefts are elastic yarns with an elastic extensibility of at least 20% which during weaving are stretched to the limit of their texture-conditioned elastic extensibility, that the resulting fabric during weaving is maintained correspondingly wide, so that loops are formed only in the wefts.

10. Method according to claim 9, characterized in that upon completion of weaving, the fabric undergoes a washing process.

11. Method according to claim 9, characterized in that the wefts are ply yarns comprising approximately 22–35% elastic yarn.

12. Method according to claim 9, characterized in that the wefts are doubled yarns comprising approximately 22–35% elastic yarn.

13. Method according to claim 1, characterized in that the weft comprises alternating elastic yarns and non-elastic yarns made of vegetable, animal, semi- or completely synthetic fibrous materials.

References Cited

UNITED STATES PATENTS

2,238,098	4/1941	Bradshaw	139—391
2,597,580	5/1952	Gluck	139—396X
2,932,327	4/1960	Frauwirth	139—396
3,030,691	4/1962	Law	139—396X
3,154,934	11/1964	Frishman	139—421X
2,574,029	11/1951	Foster	28—76

FOREIGN PATENTS

375,688	6/1932	Great Britain	139—421
893,766	4/1962	Great Britain	139—391
951,142	3/1964	Great Britain	28—76E
1,030,147	5/1966	Great Britain	139—396
559,338	3/1957	Italy	139—391
560,433	9/1957	Belgium	139—384
392,709	5/1933	Great Britain	139—420

OTHER REFERENCES

Staple Cotton Fabrics, John Hoye, McGraw-Hill Book Company, Inc., 1942, pp. 123–124. Copy available in Gr. 364.

JAMES KEE CHI, Primary Examiner

U.S. Cl. X.R.

139—391, 396