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3,142,885

METHOD OF MANUFACTURING MULTI-COLOR, CHENILLE YARN, BRAID
AND FABRICS, AND PRODUCTS MANUFACTURED BY SAID METHOD

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2 Sheets-Sheet 1

Fig. 1



Fig. 2

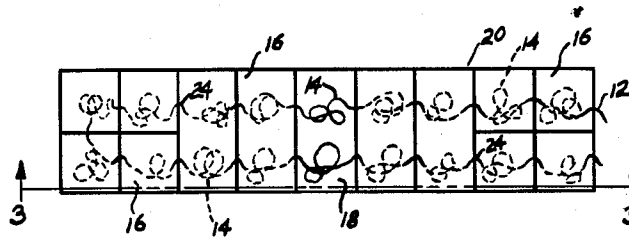


Fig. 3

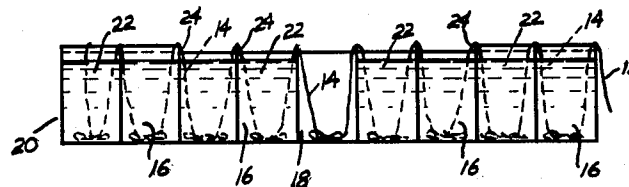


Fig. 4

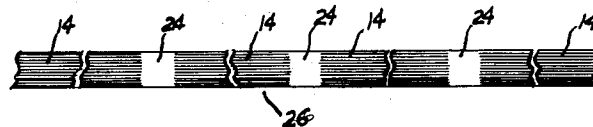
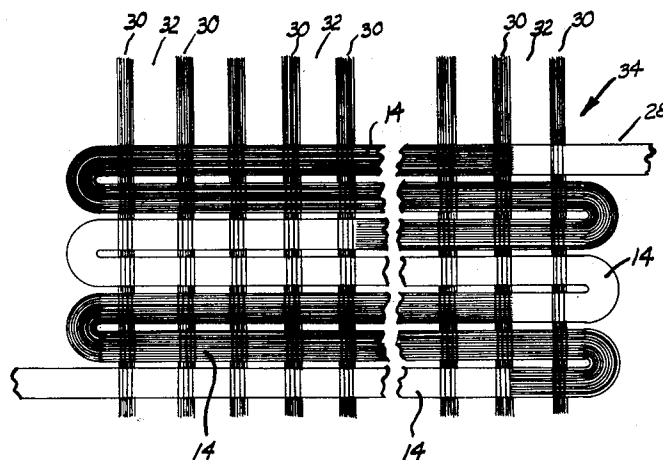


Fig. 5



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2 Sheets-Sheet 2

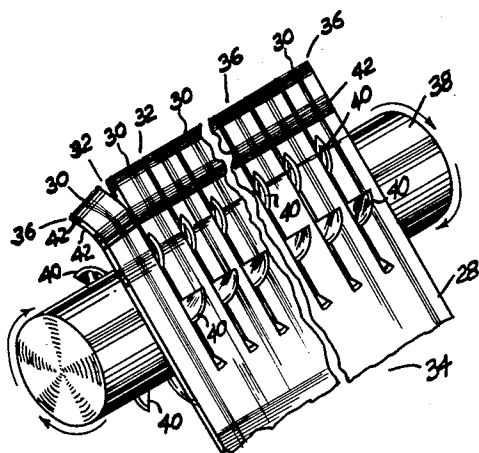


Fig. 6

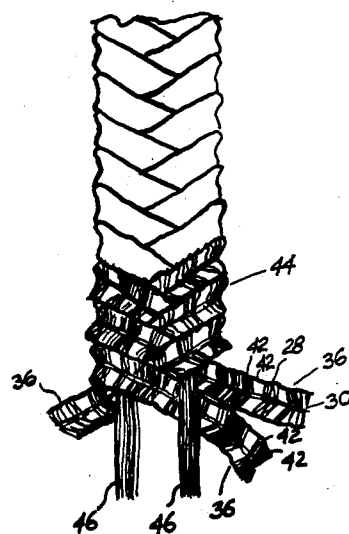


Fig. 7

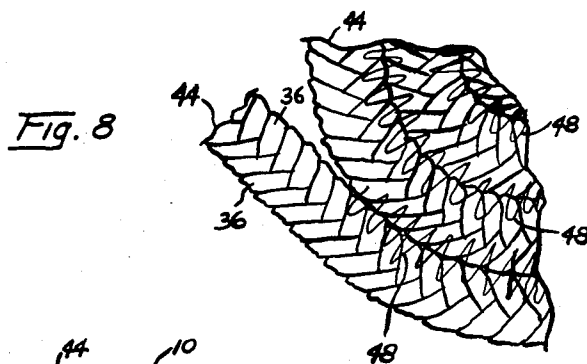


Fig. 8

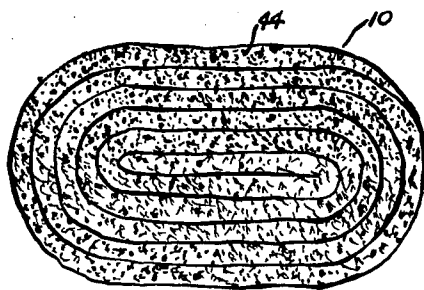


Fig. 9

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1

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METHOD OF MANUFACTURING MULTI-COLOR, CHENILLE YARN, BRAID AND FABRICS, AND PRODUCTS MANUFACTURED BY SAID METHOD

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10 Claims. (Cl. 28—72)

The present invention relates to a method of manufacturing multi-color, chenille yarn, braid and fabrics, and to the products manufactured by said method, and more particularly to a method and products of the method wherein a strand of textile material is colored with different colors in different segments and a fabric is woven with filling yarns formed from the multi-colored strand with the woven fabric subsequently cut warpwise to provide a multi-color chenille-like yarn, which yarn can be braided and the braid, or the yarn without braiding, can be formed into a fabric.

By the present invention unique decorative chenille yarn, braid and fabrics are produced having a variegated appearance with a speckling of colors that does not require precise shade matching to provide a uniformity of appearance and a matching likeness of products. The resulting product has an appearance and texture somewhat resembling tweed material. The invention is applicable to braided, woven and otherwise formed textile products.

In the preferred embodiment of the present invention a strand of textile material, such as rope warp, is dyed in a multi-compartmented dye vat with segments of the strand immersed in the different compartments of the vat to produce differently colored segments. This colored segment strand is then formed into filling yarns, which are woven into woven fabrics having warp yarns arranged in spaced groups. The woven fabric is then cut warpwise in the spaces between the groups of warp to provide yarn-like strips with the cut ends of the filling yarns providing a chenille effect. The segmented coloring of the filling yarns provides a variegated multi-color appearance with the colors speckled in a variable alternation throughout the length of the yarn-like strip. To insure the presence of a portion of each color segment of the strand in each yarn-like strip of the cut fabric the color segments are of predetermined length with each segment being at least twice as long as the width of the woven fabric so that when the filling is laid across the fabric and back each color segment will extend at least completely across the fabric and will appear in each subsequently cut strip.

These yarn-like strips may then be braided together to form braids of variegated color or the yarn-like strips may be woven or otherwise formed into a textile product. When braiding, the coloring and the shading of coloring can be mixed to avoid a concentration in a single strip of shades from a single fabric or vat by selecting the different yarns in each braid from different original woven fabrics. Lengths of these braids may then be secured together lengthwise to form a fabric. In one embodiment the braids are spirally wound and stitched along their edges to form a braided rug.

A variation of the coloring effect in the products of the present invention may be obtained by leaving some segments of the original strand undyed so that the original white or natural color of the strand will appear in one or more of the segments. Also, the color can be varied by leaving short segments between the colored segments undyed to provide small specks of white or natural color in the ultimate product.

Further advantages and features of the present inven-

2

tion will be apparent from the following description and accompanying drawings in which:

FIG. 1 is a view of a portion of a strand of textile material to be used in the method of the preferred embodiment of the present invention as illustrated in the subsequent drawings and described herein;

FIG. 2 is a diagrammatic top plan view of a multi-compartmented vat dye for dyeing segments of the strand of FIG. 1 with different colors;

FIG. 3 is a vertical sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is a broken view of the strand of textile material of FIG. 1 subsequent to dyeing in the multi-compartmented vat of FIGS. 2 and 3;

FIG. 5 is an expanded view, partially broken away, of a fabric woven with the multi-colored strand of FIG. 4;

FIG. 6 is a diagrammatic view, partially broken away, of a chenille cutting machine shown cutting the fabric of FIG. 5 into yarn-like strips.

FIG. 7 is a plan view of a length of braid formed with the yarn-like strips formed by the cutting operation of FIG. 6;

FIG. 8 is a partial plan view of a spirally wound braid with its edges stitched together lengthwise to form a braided fabric; and

FIG. 9 is a top plan view of a braided rug made in accordance with the method of the preferred embodiment of the present invention.

The drawings illustrate the preferred embodiment of the method of the present invention and the yarn, braid and fabric products manufactured by this method. FIG. 9 illustrates a braided rug 10 made according to the present invention and having the unique speckled multi-color appearance that is a feature of the present invention.

The rug 10 is formed by the method illustrated in FIGS. 1 through 8, starting with the strand 12 of yarn, such as a rope warp, preferably substantially untwisted to provide a chenille effect in the ultimate product as will be described.

The strand 12 of rope warp is dyed by immersing segments 14 in the compartments 16 and 18 of a multi-compartmented dyeing vat 20. The compartments 16 contain different colors or shades to provide different colored segments 14 in the strand 12. The different colors or shades in the various compartments 16 may be selected as desired to provide a particular coloring effect in the final product. Also, if desired, one or more of the compartments, such as that indicated as 18, may be used without any dye therein so that the segment of yarn placed in that compartment will retain its original color.

It will be noted from FIG. 3 that the level of dye 22 in the compartment 16 is slightly below the top of the compartment for convenience and to avoid splashing or other mixing of the different colored dyes in the different compartments. As a result the strand 12 has portions 24 connecting the segments 16 in the adjacent compartments, which portions 24 are not immersed in the dye 22 of any compartment. A natural wicking action will draw the dye 22 from the compartments 18 into these small portions 24 when the level of the dye is substantially close to the top of the compartment so that there will be no remaining undyed portions. However, if desired, the dye level can be lowered or a baffle inserted above the compartment to increase the length of the strand so that at least part of the portions 24 will remain white or the natural color of the original strand 12. Such white portions 24 are shown between the colored segments 14 of the dyed strand 26 in FIG. 4.

After dyeing, the strand 26 is divided into smaller groups of yarns 28 which are wound on cops or the like preparatory to use of the yarns as filling in a weaving

operation. These yarns 28 have the same colored segments 14 as the dyed strand 26 and remain substantially untwisted to provide the desired chenille effect in the ultimate product.

These filling yarns 28 are woven in any conventional manner, as on a commercial cam loom, with warp yarn arranged in groups 30 with spaces 32 between these groups 30. The resulting woven fabric 34 is illustrated in FIG. 5 which is expanded for purposes of illustration. As seen in FIG. 5 the filling yarns 28 progress back and forth across the fabric 34.

The length of each of the colored segments 14 of the filling yarns 28 is preferably twice as long as the fabric is wide so that regardless of the point in the fabric at which the segment starts it will extend completely across the fabric 34. For example, when weaving on a loom that weaves a 36" wide fabric, each colored segment should be at least 2 yards long. If the segments 14 are less than twice as long as the width of the fabric it would be possible for a colored segment to be absent from a particular warp group 30, which would result in a non-uniformity of the products made from the woven fabric 34, which products will be described below.

The woven fabric 34 is cut into yarn-like strips 36 by any known means, such as a conventional chenille cutting machine of which there are several types. In the embodiment illustrated the chenille cutting machine has a rotating cutting cylinder 38 on the surface of which are mounted arcuate cutting blades 40 arranged in radial planes spaced axially along the length of the cylinder 38. The woven fabric 34 is passed tangentially across the surface of the rotating cylinder 38 in a warpwise direction and with the spaces 32 between warp groups 30 aligned with the cutting blade 40 so that the fabric is cut between warp groups 30. As a result of this operation the woven fabric 34 is cut into strips 36 with a warp group 30 in the center of each strip 36 and with the filling yarns 28 having free ends extending outwardly from the warp groups 30 to provide a chenille effect that is enhanced by the fact that the filling yarns are substantially untwisted.

Each of these strips 36 is made up of small sections 42 of each of the differently colored segments 14 of the filling yarn 28 to provide a multi-color strip of yarn-like material that can be used in any desired manner, such as in combination with other yarns to form a textile product.

In the preferred embodiment of the present invention the strips 36 are braided into braids 44. As seen in FIG. 7 three strips 36 are braided about a pair of spaced filler strands 46 in any known braiding operation. To provide uniformity in the color of braids made in this manner and to permit matching of braids without a predominance of a color shade, each of the three strips 36 is selected from a different fabric 34, and preferably from fabrics woven from filling yarns 28 from different dye batches. As a result a variegated color braid 44 is produced having a speckling of the colors produced by the presence of the small sections 42 of differently colored yarn. This combination of variegated color and the free ends of the untwisted filling yarns 28 provides a tweed-like chenille appearance.

The braids 44 may be manufactured into products such as the rug 10 in any desired manner. In the preferred embodiment a braid 44 is spirally wound with its edges secured together by stitches 48, as seen in FIG. 8, to produce a textile product such as the rug 10 illustrated in FIG. 9. However, it should be noted that one or more braids may be combined in any desired manner, other than that illustrated, to produce a particular textile product.

The yarn-like strips of the present invention can also be used as warp or filling in weaving articles such as rugs, with similar color effects. Also it is apparent that the invention is applicable to other types of textile articles and manufacture.

The present invention has been described above for purposes of illustration only, and is not intended to be limited by this description or otherwise except as defined in the appended claims.

I claim:

1. A method of manufacturing a multi-color, chenille, braided fabric comprising coloring different segments of a strand of textile material with at least two different colors to provide different colored segments, weaving a woven fabric with filling yarns made from said strand of different colored segments, cutting said woven fabric warpwise into lengths of chenille-like yarn, braiding a plurality of said yarn lengths together to form at least one braid, and securing lengths of said at least one braid together lengthwise.

2. A method of manufacturing a multi-color, chenille, braided fabric comprising coloring different segments of predetermined length of a strand of textile material with at least two different colors to provide different colored segments, weaving a woven fabric with a filling yarn made from said strand of different colored segments, said predetermined lengths of said segments being at least twice as long as the width of said woven fabric, cutting said woven fabric warpwise into lengths of chenille-like yarn, braiding a plurality of said yarn lengths together to form at least one braid, and securing lengths of said at least one braid together lengthwise to form a fabric.

3. A method of manufacturing a multi-color, chenille yarn comprising coloring different segments of predetermined length of a strand of textile material with at least two different colors to provide different colored segments, weaving a woven fabric with a filling yarn made from said strand of different colored segments, said predetermined lengths of said segments being at least twice as long as the width of said woven fabric, and cutting said woven fabric warpwise into lengths of chenille-like yarn.

4. A method of manufacturing a multi-color, chenille, braided fabric comprising coloring different segments of strands of textile material with at least two different colors to provide different colored segments, weaving a plurality of woven fabrics with filling yarns made from said strands of different colored segments, cutting said woven fabrics warpwise into lengths of chenille-like yarn, braiding yarn lengths cut from different fabrics together to form at least one braid, and securing lengths of said at least one braid together lengthwise to form a fabric.

5. A method of manufacturing a multi-color, chenille yarn comprising placing segments of a strand of textile material in compartments of a multi-compartmented dyeing vat having at least two different color dyes in different compartments to produce different colored segments in said strand, weaving a woven fabric with filling yarns made from said strand of different colored segments, and cutting said woven fabric warpwise into lengths of chenille-like yarn.

6. A method of manufacturing a multi-color, chenille yarn according to claim 5 and characterized further in that at least one of the vat compartments in which a strand segment is placed has no dye therein.

7. A method of manufacturing a multi-color, chenille yarn comprising placing segments of predetermined length of a strand of textile material in compartments of a multi-compartmented dyeing vat having at least two different color dyes in different compartments to produce different colored segments in said strand, weaving a woven fabric with a filling yarn made from said strand of different colored segments, said predetermined lengths of said segments being at least twice as long as the width of said woven fabric, and cutting said woven fabric warpwise into lengths of chenille-like yarn.

8. A method of manufacturing a multi-color, chenille braid comprising coloring segments of predetermined length of strands of textile material with at least two different colors to provide different colored segments, weaving a plurality of woven fabrics with filling yarns

5

made from said strands of different colored segments, said predetermined lengths of said segments being at least twice as long as the width of said woven fabrics, cutting said woven fabrics warpwise into lengths of chenille-like yarn, and braiding a plurality of yarn lengths cut from different fabrics together to form a braid.

9. A multi-color chenille braid comprising a plurality of multi-color chenille yarns braided together to form a braid, each of said yarns having differently colored longitudinal sections of transversely extending yarn components with a plurality of said sections formed from differently colored longitudinal segments of a common yarn strand, and said transversely extending yarn components being secured together to form said each yarn by longitudinally extending yarn components.

10. A multi-color chenille fabric comprising lengths of braid material secured together lengthwise, each of said lengths of braid material being formed of a plurality of multi-color chenille yarns braided together, each of said yarns having differently colored longitudinal sections of

6

transversely extending yarn components with a plurality of said sections formed from differently colored longitudinal segments of a common yarn strand, and said transversely extending yarn components being secured together to form said each yarn by longitudinally extending yarn components.

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