METHOD AND APPARATUS FOR MANUFACTURING FABRICS

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ABSTRACT OF THE DISCLOSURE

Apparatus for manufacturing by hand a fabric with a decorative tufted pile design on each face. A pattern device is affixed to a hexagonal fabric module and successive layers of yarn landed around the device and into the fabric, each layer enclosing the one before. The layers are cut lengthwise adjacent to each face of the fabric module, permitting the strands of yarn to stand upright, and the pattern device is removed. The module is then joined to other similarly prepared modules to form a finished product, such as a rug, blanket or pillow.

1. Field of the invention

This invention pertains to pile fabrics, and more particularly to apparatus by which yarn piles may be hand-formed on opposite faces of a plain fabric in complementary decorative designs.

2. Description of the prior art

Previous methods of making decorative tufted pile designs by hand on a piece of textile fabric consisted of looping yarn across one face of the fabric and securing each loop end to the fabric base. The loop ends were secured by passing the yarn down through the fabric and either bringing it back up through the fabric next to the ending or carrying it over to the other side of the loop before bringing it back through, or by other means. This practice produced a fabric with decorative pile on one face only. The opposite face was important only to the extent that it was involved in the securing process. It served no decorative purpose and had to be positioned so as not to be in view when the fabric was displayed.

The normal practice of forming a tufted pile on only one face limits the range of applications for which a completed fabric is suitable, and even where it can be used the unplied face sometimes gives rise to distinct disadvantages. The most apparent limitation is that the fabric cannot be successfully used whenever it is likely that both of its sides will be exposed to view. In addition to visual appeal, fabric pile also has a cushioning effect that is important in many applications, and conventional fabrics with pile on only one face prove inadequate where there is a need for cushioning on both faces or for decoration on one face and cushioning on the other. For example, a bed coverlet, popularly referred to as an afghan, requires decoration on at least the upper side and cushioning on both sides, and hence cannot be successfully formed from a fabric with pile on only one face. A decorative pillow or throw cushion, on the other hand, needs decoration on the outside and cushioning on the inside. If it is made from conventional pile fabric, it must be filled with stuffing before it can be used.

Piled fabric is most often found in rugs and carpets. Stylistically decorated scatter rugs or throw rugs offer an opportunity for individual artistic expression and are more popular in the field of handmade articles than are wall to wall carpets or area rugs. Unlike the latter category, scatter rugs and throw rugs are frequently used without a mat or backing to protect them from direct contact with the floor. In practice they are subject to movement when a person walks on them, and thus rub against the floor under the pressure of body weight. This results in excessive wear to the yarn on the underside when the rug has been hauled on one side, and can also scratch the floor. In addition, if the pile is secured only by looping on the underside of the fabric, the loops can catch on splinters or other protrusions and pull the pile out.

BRIEF SUMMARY OF THE INVENTION

This invention provides a solution to the above disadvantages associated with conventional handmade decorative piled fabrics and enhances their adaptability by providing apparatus for practicing a method of manufacturing a fabric pile in which piles extend across both faces of the fabric. Hence it is a principal object of this invention to provide apparatus whereby piles may be made to extend from both faces of a piece of fabric in a decorative arrangement. With such apparatus more flexibility can be achieved in utilizing both the decorative and cushioning features offered by the pile. It is thus a further object of this invention to provide a decorative pile for fabrics in which each side of the fabric has the individual capability of serving either a decorative function or a cushioning function, or both functions at once. A related object is the provision of decorative pile for fabrics in which the length of pile on each face of the fabric can be determined independently of the pile length on the opposite face, whereby each pile length is made most suitable for the particular use planned for that face.

Another object of this invention is to provide an apparatus for manufacturing a scatter rug or throw rug that can be placed in direct contact with the floor without scratching the floor and without subjecting the underside of the rug to excessive wear. Yet another object is the provision of apparatus for manufacturing a scatter rug or throw rug without loops on the underside that can catch on surface protrusions and pull the pile out.

In the accomplishment of these and other objects of this invention, in a preferred embodiment thereof, modules are formed from a plurality of closely woven or matted fabric pieces. The modules are provided with pile on both faces by placing a stiff pattern device with several prongs extending against a central area of each module as a lacing guide, and loosely anchoring it thereto. A darning needle or similar instrument is then used to face a length of yarn into each of the modules in a generally spiral series of loops around each prong. A first layer of yarn is thus formed adjacent to the fabric on one side of each module and adjacent to the pattern device on the other side. A second layer of yarn, which is preferably of a different color, is then laced over the first layer. Additional layers of various colors may be added on top of the
first two, depending on the pile thickness and decoration desired, to form decorated arms. Doubling each length of yarn on the needle before lacing will also produce a thicker pile. It is not necessary that each layer of yarn completely cover the preceding layer, and a variety of different decorative effects can be achieved by only partially covering some layers.

When the arms have been completely laced, the layers of yarn are slit lengthwise by a scissors or other cutting tool first on one side and then on the other side of the module, allowing the pieces of yarn to extend outwardly from both faces of the modules in the manner of a tufted pile. A pleasing, multicolored decoration, in which the pile also acts as cushions, is thus formed on both sides of the module.

When all the modules have been completed, they are sewn together at the edges into a continuous sheet of fabric which can serve as a rug, afghan, or the like, or two fabric sheets can be joined back to back to make a pillow or cushion. A hexagon has found to be the most satisfactory module shape for this purpose. Hexagons can be joined to each other in a continuous sheet without gaps, and the sheet will be strong because the junction lines are zig-zag rather than straight. Squares and triangles can also be used because they are the only other regular polygrams that fit together without gaps, but in this invention it has been found that a greater area and a more regular pattern of pile can be achieved with hexagonal modules.

This invention requires neither special skills nor cumbersome apparatus, and it may conveniently be practiced at home as a hobby. I plan to use a packaged kit containing yarn, fabric modules, a darning needle, and pattern devices, plus any other desired optional features such as fringe material or needle and thread for applying the pattern devices to make the invention easily available to consumers.

It is readily apparent that this invention is capable of many modifications and adaptations. For instance, the thickness of the pattern device used as a guide in the lacing process will determine the length of yarn in the loops on that side of the fabric, and consequently the pile length on that side. Therefore the thickness of the device may be varied according to the pile length desired. Similarly, two matching pattern devices of varying thicknesses may be used, conveniently, one adjacent to each face of the fabric, to vary the pile length on both sides. Hence the following drawings and detailed description are presented for purposes of illustration only, and it is not my intent to limit this invention to the specific forms described therein. Rather, I intend to claim broadly my unique apparatus for producing a piece of fabric on both sides with a decorative and cushioning pile.

**DRAWINGS**

FIG. 1 is a plan view of one side of a fabric module decorated with the pile of my invention.

FIG. 2 is a plan view of a partially completed module, showing the yarn after cutting on two arms and as yet uncut on the remaining four arms.

FIG. 3 is a plan view of a pattern device that may be used as a lacing guide.

FIG. 4 is a fragmentary view of a length of yarn being laced onto a module.

FIGS. 5 and 6 are views in cross-section taken respectively along the lines 5—5 and 6—6 of FIG. 2.

FIG. 7 is a fragmentary view of a scissors being used to cut the layers of yarn adjacent to one face of the module.

FIG. 8 is a view in cross-section of an uncut decorative arm, showing a relatively thin pattern device on the upper side and a relatively thicker pattern device on the lower side.

FIG. 9 is a diagrammatic plan view showing a plurality of completed modules joined together in a continuous sheet that may be used for a rug, afghan, or the like.

**FIG. 10** is a view in perspective of a pillow composed of several completed modules joined together.

**FIG. 11** is a plan view of the components of a kit that can be used to disseminate my invention.

**DETAILED DESCRIPTION**

Having reference to the accompanying drawings for a more particular description, a length of yarn 2 is laced onto a fabric module 4 of regular polygonal shape by repeatedly piercing the fabric and passing the yarn down through the module 4, across on the other side, and back up again in a series of adjacent loops to form a generally flattened spiral-like layer of yarn 5. The fabric from which the module 4 is formed is either a tightly woven textile material or a matted material such as felt. In the preferred embodiment the module 4 is hexagonal, but it may also be rectangular or square. Any conventional means, such as a darning needle 3, may be used to draw the yarn 2 through the module 4. A generally flat, conventional pattern device 9, illustrated in FIG. 3, is used as a guide in the lacing process. It may be made from metal, plastic or any other stiff material and has a central prong forward and outwardly toward the apices of the module 4. The device 9 is temporarily centered on and affixed to one face of the module 4 by sewing through holes 10 provided in the prongs, and the yarn 2 laced around it on that face.

After securing one end of the yarn 2 to the module 4 by knotting, the other means, the lacing process is continued until all the prongs on the pattern device 9 are covered by the first layer of yarn 5. In this manner, it can be seen that arms 6 will be formed in the module 4 with a layer of yarn appearing on both sides of the fabric. A second layer of yarn 7 is now laced over the first layer 5 in a similar fashion, continuing the lacing until the first layer 5 is completely enclosed. The yarn used for the second layer 7 may be a different color from that of the first layer 5, adding to the decorative effect. The manufacturer may now add additional multicolored layers of yarn 8, depending upon the ultimate decoration and degree of cushioning desired.

After all the arms 6 have been completely laced, the layers of yarn 5, 7 and 8 opposite one face of the module 4 are slit lengthwise from the middle of the module 4 towards the apices with a scissors 11 or other cutting device. The yarn on that face will now extend outwardly from the module 4 and form a pattern of tufted pile 12. FIG. 2 illustrates a stage in which the arms 6 have been slit and the remaining arms 6 have been laced but not yet slit. One face of a completed module is illustrated in FIG. 1. The layers of yarn on the opposite face are next slit in a similar manner, and the pattern device 9 removed. Decorative pile arrangements are thus formed on both faces of the module 4, and the product may now be used to display one side or as a reversible material with both sides displayed.

A plurality of modules 4 are manufactured in the manner described above and sewn together into a continuous sheet 14, illustrated diagrammatically in FIG. 9. The sheet 14 can be made any size and shape desirable, depending only on the number of modules 4 used and the pattern in which they are sewn together, and can be used as rugs, afghans and the like. The provision of pile 12 on both sides of the sheet 14 makes the product softer than material attained by prior methods with pile on only one side. When used as a rug the presence of pile on both sides in contact with the floor enhances the wear on the underside and inhibits scratching the floor when the rug is moved. A fringe may be sewn around the periphery to add to the decorative effect. As illustrated in FIG. 9, the modules 4 are sewn together along zig-zag seams. This makes the final product stronger and more resistant to tearing than one with straight seams. FIG. 10 shows two sheets sewn back to back to form a pillow. The provision of pile 12 on the side of the sheet facing the inside of the pillow as well as on the outside eliminates the need.
for stuffing the pillow, saving both effort and the cost of stuffing.

As mentioned above, the pile 12 serves as a cushion for the module 4 in addition to adding a decorative effect, and many variations in the method of manufacture are possible to produce the optimal cushioning effect on each side of the module 4 for the intended use. For example, the yarn 2 may be doubled onto the darning needle 3 or other device used in the lacing process, increasing the thickness of the resulting pile 12 and consequently adding to the cushioning effect. Also, it is not necessary that every successive layer of yarn completely enclose the layer beneath it. The degree of cushioning, as well as the decoration, can be varied by layering a layer only partially over the previous layer.

Pile length is another factor in the amount of cushioning achieved. Pile length can be increased with the use of a pattern device 9, previously mentioned as a lacing guide. The yarn 2 has to be drawn over the pattern device 9, and hence the loops on that side of the fabric module 4 will tend to be longer, producing a longer pile 12. Two matching devices 9, one on each side of the module 4 and temporarily sewn together through the fabric, can be used to lengthen the pile 12 on both sides.

It is not necessary that the two devices be of equal thickness, and the loops on one of the module 4 faces can be made larger than those on the other face by the use of a thicker pattern device 9 on the first side as illustrated in FIG. 8.

My invention comprehends a packaged kit with instructions for its use which can conveniently be offered to the public. In accordance with the invention, the kit, illustrated in FIG. 11, contains a plurality of hexagonal fabric modules 4, yarn 2, a darning needle 3, and one or more pattern devices 9.

Still other modifications and applications of my invention will be obvious, and, therefore, it is not my intention to confine the invention to the precise form herein shown but rather to limit it in terms of the appended claims only.

I claim:

1. A kit for emplacing pile on opposite faces of a module for long-wear goods such as rugs, afghans, pillows and the like, said kit comprising: (a) a plurality of identically shaped pieces of tight woven or matted fabric such as felt, each having a regular polygonal shape such that they may be joined together to form a continuous sheet without gaps, (b) at least one pronged member adapted to be detachably secured to said fabric pieces, said pronged member having a central area with flat prongs extending therefrom in a symmetrical array, the number of said prongs on each member being equal to the number of sides on said fabric pieces, the edges of said prongs adapted to guide the lacing of yarn thereabout, (c) means for hand-lacing yarn through a fabric piece in a series of loops around each prong of an attached pronged member, said means including a length of yarn having a diameter of sufficient thickness relative to the texture of said fabric pieces that a resistance to pulling is developed when the yarn is laced through one of said fabric pieces, whereby the pronged member may be hand-laced to said fabric piece with one or more layers of yarn, said layers extending around the outermost surface of said pronged member on each side, and whereby said layers may be slit longitudinally along the axis of each prong on both sides of said fabric piece to form a tufted pile pattern on both sides thereof, (d) printed instructions substantially describing the emplacing of said pile by temporarily affixing a pronged member to one of said fabric pieces, lacing a plurality of yarn layers about each prong of said pronged member and said fabric piece with the pronged members as a lacing guide, slitting the loops of yarn thus formed on one side of the fabric along the axes of said prongs, similarly slitting said loops on the other side of the fabric, and separating said pronged member from said fabric.

2. The kit of claim 1 wherein said fabric pieces are in the shapes of regular hexagons.

References Cited

UNITED STATES PATENTS


LEONARD SUMMER, Primary Examiner

112—401, 410

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