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2,884,680

METHOD OF MAKING A MULTI-LEVEL PILE FABRIC

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FIG. 1.

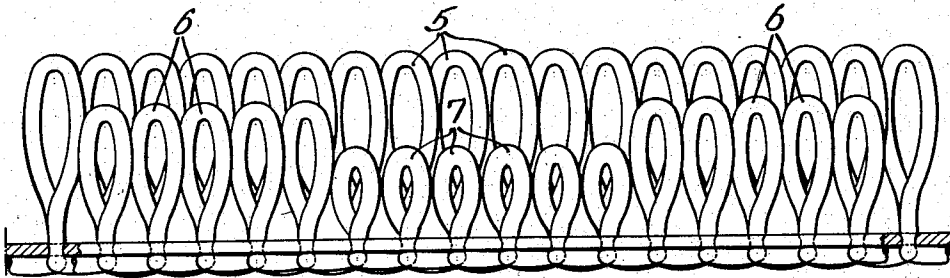


FIG. 2.

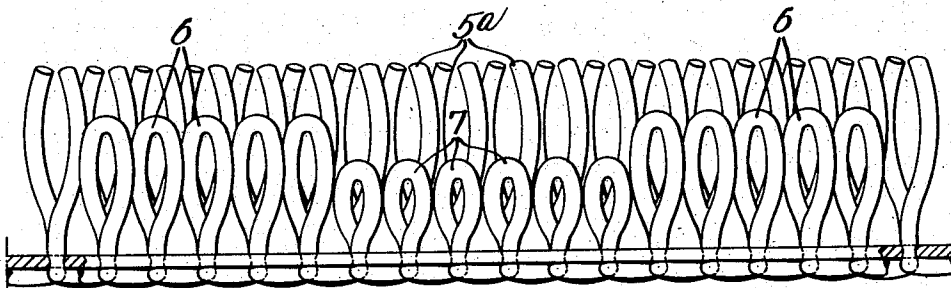
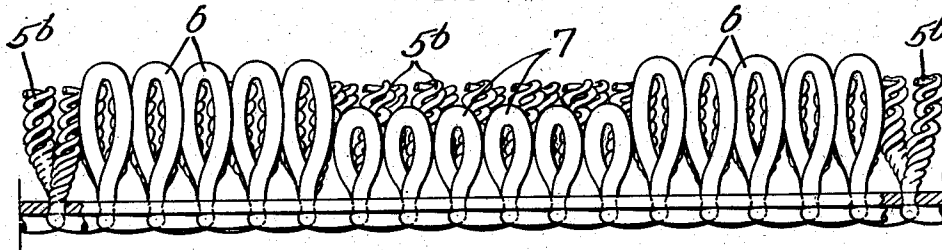


FIG. 3.



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METHOD OF MAKING A MULTI-LEVEL PILE FABRIC

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5 Claims. (Cl. 28—72)

This invention relates to a method for producing a pile fabric and more particularly to a tufted pile floor covering having both cut and uncut face pile and to the method of producing it.

The ability to provide pleasing and saleable fabrics on a tufting machine presents substantially different problems and considerations than is the case with the heretofore more conventional woven floor coverings. For example, the ability to provide cut and uncut pile surface in the same fabric on a loom is relatively simple and well known since it is merely a question of the judicious selection of round and cutting pile wires. In a tufting machine, however, this problem is an entirely different matter because the loopers for a cut pile fabric face in one direction whereas the loopers for an uncut fabric face in the opposite direction and there is no means for selectively operating such loopers even if they were to be combined.

The present invention, therefore, contemplates a method for providing a tufted floor covering in which the areas of cut and uncut pile can be controlled by the designer to provide the desired texture or pattern effect.

The invention, therefore, has for a primary object the provision of a method for fabricating a tufted pile fabric in which the visible areas of cut and uncut pile are controlled in accordance with a pattern mechanism.

Further objects will be apparent from the specification and drawings in which

Fig. 1 is a warpwise sectional view of a fabric constructed in accordance with the present invention immediately after leaving the tufting machine,

Fig. 2 is a view of the fabric of Fig. 1 after the first step in the method has been performed, and

Fig. 3 is a view showing the finished fabric of Figs. 1 and 2.

The invention comprises essentially the provision of a series of high loops formed in rows of stitches running intermittently across the fabric. These constant height high loops are formed in any well known manner; for example, by using a pattern attachment comprising a series of feed rollers. One set of these rollers is run at constant speed at all times and the feed is so adjusted that the yarns controlled thereby will be tufted by the needles through which they are threaded to provide a relatively high series of loops as compared to the yarns controlled by the rollers capable of being operated at variable speed. The variable speed rollers are actuated through the medium of a patterning device to change the relative speed of the rollers thereby to provide areas of high and low loops as is well known in the art and which forms no part of the present invention.

By utilizing a high twist yarn for the constant height high tufted areas, which yarn may desirably be rayon, a rayon-wool blend, or any other blend of natural and synthetic fibers and which desirably uses a pre-set backtwist, it is possible to shear the tips of these high loops and then subject the fabric to a treatment which will permit the high twisted loops to relax and thus contract in height so that the ultimate height of the cut pile area will

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be higher than the low or lowest loop pile area but lower than the high or highest loop pile area. Since the high and low loops are controlled by the pattern attachment, it will be apparent that where there are high uncut loops remaining after the shearing operation, this area gives the appearance of being uncut because the high loops conceal the lower cut tufts. Conversely, in areas where the cut tufts are higher than the loops, the fabric will have the appearance of being cut because the higher cut tufts conceal the lower loops in that area. In order to achieve this effect, it will be understood that the yarn for the constant height high loops is desirably threaded through alternate needles of the tufting machine or the yarn for the high loops to be sheared may be threaded through the same needles as the pattern controlled yarn. It is important, however, that the sheared and unsheared rows of stitches be sufficiently intermingled with each other so that the lower one of the two in any given area is substantially concealed by the higher.

Referring now to Fig. 1, the row of high loops 5, 5 is controlled by a constant feed relatively low tension device to provide maximum height loops which are higher than the highest pattern controlled loops 6, 6 as well as the lowest pattern controlled loops 7, 7 preferably in an adjacent row of stitches. After the tufting operation is complete the fabric is sheared as shown in Fig. 2 so that the high loops 5, 5 now become high tufts 5a, 5a. As previously noted, the yarn for the tufts 5a, 5a is highly twisted or backtwisted so that even after shearing there will be a tendency for these tufts to untwist and, therefore, become reduced in height. This condition in practice immediately follows the shearing such as shown in Fig. 2 and would provide a relatively lower total height for the cut tufts. To insure that the cut tufts contract to the desired extent, it is preferred to subject the fabric to a steaming or relaxing treatment which in effect still further lowers the height of these tufts to a point substantially as shown in Fig. 3 in which the cut pile surface is now below the high loops 6, 6 and will, therefore, be substantially masked or concealed in those areas. However, where the pattern controlled yarns are given increased tension in the pattern attachment so that the low loops 7, 7 occur, these loops will nevertheless be masked or substantially concealed by the relaxed tufts 5b, 5b in the same or adjacent rows of stitches.

It will thus be understood that I have provided a novel method for producing a tufted pile fabric in which there is a combined cut and uncut pile surface and also in which the relative areas giving a cut appearance can be controlled at the will of the designer with regard to the area having an uncut appearance. The fabric is inexpensive to manufacture and no additional apparatus on the tufting machine is required.

Having thus described my invention, I claim:

1. The method of producing a cut and uncut pile fabric comprising the steps of tufting a plurality of rows of high loops, simultaneously tufting a plurality of rows of closely adjacent loops, said second rows of loops being of at least two different lower heights than the first rows, shearing all of the tips of the high loops simultaneously across the fabric and progressively along the fabric to form cut pile tufts, and treating the sheared tufts with steam to relax and contract said tufts to a height lower than the high loops in the second rows.
2. The method of claim 1 in which the yarns in the first series of rows have a high twist yarn.
3. The method of claim 2 in which the yarns have a high backtwist.
4. The method of claim 3 including the step of steaming the fabric after shearing.
5. The method of producing a cut and uncut pile fabric

comprising the steps of tufting a plurality of parallel rows of high stitches, simultaneously tufting a plurality of parallel rows of closely adjacent uncut stitches said second parallel rows of uncut stitches being of at least two different lower heights than the first parallel rows, shearing substantially all the tips of the loops in the first parallel rows of stitches, and treating the sheared tufts to relax and contract said tufts to a height lower than the high loops in the second parallel rows.

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