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2,713,360

CARPET FABRICS

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Fig. 1.

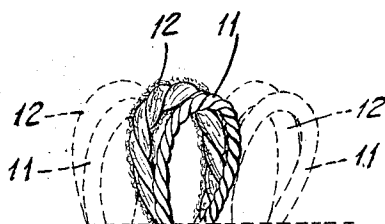


Fig. 2.

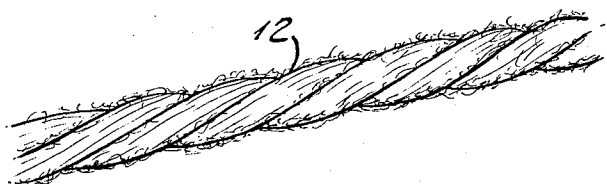
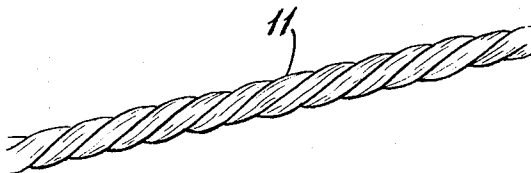


Fig. 3.



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CARPET FABRICS

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This invention relates to improvements in various types of fabric including loop pile fabrics, and to methods of producing the same, and more particularly to fabrics having the combination characteristics of resilience and fullness.

In order to produce the desired soft and bulked appearance in carpeting and the like, it has been the practice to manufacture the fabric with a soft twist yarn which has the disadvantage of having large interstitial air spaces which tend to collapse when the fabric is worn or stepped upon and which gives the appearance of lacking body and which has insufficient resilience for recovery of the original surface appearance.

In order to overcome the disadvantages of soft twist yarn loops, we provide a composite textured pile fabric having unusual fullness and surface interest. This is accomplished by producing a fabric having some loops of relatively hard twist yarn and some loops having relatively soft twist yarn. The hard twist loops contribute the requisite resilience for holding up the soft twist yarn and helping it to resume its original fullness after being crushed when the carpeting is walked over, or furniture is moved from place to place.

Still other objects and advantages of our invention will be apparent from the specification.

The features of novelty which we believe to be characteristic of our invention are set forth herein and will best be understood, both as to their fundamental principles and as to their particular embodiments, by reference to the specification and accompanying drawings, in which:

Figure 1 is a greatly enlarged cross-section view, partly in elevation, of a portion of carpet fabric showing several yarns having the different characteristics described herein;

Fig. 2 is an elevation of a portion of soft twist yarn; and

Fig. 3 is an elevation of a portion of a hard twist yarn.

Referring now to the drawing in detail, there is shown in Fig. 1 several pairs of yarn loops, each pair consisting of a loop 11 composed of a hard twist yarn and a loop 12 of soft twist yarn. See Figs. 3 and 4.

In some embodiments, these yarns are woven in paired loops as shown in Fig. 1 by the following means: In warping, the yarns alternate, one being hard twist, and the other being soft twist across the whole warp. One hard twist yarn and one soft twist yarn are woven as a pair, the two weaving as one, going over the wire or gauge together to form the pile loop and going under the filling threads together.

In other embodiments, these loops may be woven side by side or in alternate arrangements, whereby the mass of the fabric has a certain predetermined ratio between soft twist and hard twist yarn loops substantially evenly distributed over the whole fabric.

The function of the soft twist yarns is to fill out the fabric and give the appearance of a rich fullness which is found desirable in high quality carpeting. If only soft twist yarns are utilized in carpeting, however, it is found that such yarns have insufficient resilience and more

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quickly lose their original fullness when depressed by the footsteps of persons, or the like.

In order to preserve the fullness, and add to the surface interest provided by soft twist fabrics, we intersperse a sufficient number of hard twist loops mixed with the soft twist loops to provide a strong body support for the soft twist loops and to restore the latter to their original fullness after they have been pressed down.

Since the hard twist loop 11 has a substantially greater resilience than the soft twist loop, it has greater tendency to assume its original upright looped position after being stepped upon or crushed. When applied pressure is released from the fabric, loops 11 will spontaneously rise and permit the somewhat less resilient loops 12 also to rise, thereby restoring the surface level of the fabric to substantially its original fullness. The hard twist loops perform the function not only of permitting the soft twist loops to resume substantially their original position but also they prevent to a great extent the matting down of the soft twist loops under usage by bearing the brunt of resistance to crushing.

The mixture of hard twist and soft twist loops will also provide a certain surface interest to the fabric which is different from other types of carpeting. The carpet produced by this method and having the structure described herein will have the desired fullness that is contributed by the soft twist yarns for the reason that these soft twist yarns have somewhat more bulk than the hard twist yarns and will therefore extend slightly higher than the hard twist yarns, giving the soft fullness of surface structure that is considered desirable. At the same time the hard twist yarn will give the fabric an overall resilience to support the soft twist yarns and increase the wearability of the carpet as well.

In actual practice, the hard twist and soft twist yarns could preferably be woven together as one to produce a plain, all-over textured carpet. This new structure, however, may also be used as a ground for patterned structures as well, and the principle herein may apply to fabrics whether they are woven, knit, tufted, punched or hooked. It is contemplated that the principle herein may be utilized regardless of the type of fiber that is used, whether natural or synthetic, and will include such fibers as wool, cotton, nylon, rayon, acrylics, and the like, but is particularly applicable to the more resilient fibers.

The fabrics produced by the present method provide a material with a better combination of fullness, surface interest and resilience than materials made by using either a soft twist yarn alone, or a hard twist yarn alone.

The new fabric produced herein has the advantages provided by the soft twist yarn that contains considerable interstitial air, and accordingly, has more bulk, while the hard twist yarn supports the soft twist yarn and preserves the bulk of the structure as a whole.

It is also contemplated that yarns utilized in the present invention may also comprise regular and reverse twist yarns for producing surface effects as described in our pending application Ser. No. 298,401, filed July 11, 1952, now Patent No. 2,677,871, issued May 11, 1954.

In the foregoing discussion, the designation of the loops as being composed of hard twist yarn and soft twist yarn is intended to define a relative hardness and softness whereby one loop is composed of a harder twist than another. In general, a soft twist loop may comprise a yarn twisted from between 1½ to 4½ turns per inch, while the hard twist loop may comprise a yarn twisted from between 5 to 10 turns per inch.

As actual embodiments of our novel structure, the following are typical:

Example 1.—A textured woolen carpeting, woven with 12½ pile yarns per inch. The pile yarns are woven in pairs, of wool yarn 50 yards to the ounce in 2-ply, one of

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the yarns in each pair being twisted 7 turns per inch and the other yarn in each pair being twisted 3 turns per inch. The ground is composed of cotton, 12½ warp yarns per inch, and the filling is of jute. The pile yarn is woven over a wire or gauge ⅜" in height, woven in solid color. Regular and reverse twist may be used alternately with respect to each thread of both hard twist and each thread of soft twist.

Example 2.—12½ pile yarns per inch are composed alternately of a wool yarn twisted three turns per inch, 50 yards to the ounce, of solid continuous color, and a rayon yarn of 7 turns to the inch, dyed in continuously changing colors, the pile yarns being woven over a wire or gauge ¼" in height. There are 12½ ground cotton yarns per inch, and the filling is of jute. The combination of solid color yarns interwoven with yarns of changing colors produces a pleasing random effect.

In the specification, we have explained the principles of our invention, and the best mode in which we have contemplated applying those principles, so as to distinguish our invention from other inventions; and we have particularly pointed out and distinctly claimed the part, mode or combination which we claim as our invention or discovery.

While we have shown and described certain preferred embodiments of our invention, it will be understood that modifications and changes may be made without departing from the function and scope thereof, as will be clear to those skilled in the art.

We claim:

1. A pile floor covering comprising a plurality of pairs of separate loops of yarn uniformly disposed throughout the structure, said pairs of loops consisting of a loop of hard twist yarn and a loop of soft twist yarn.

2. A pile fabric comprising a plurality of separate loops

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of soft twist yarn and a plurality of separate loops of hard twist yarn, said loops of hard twist yarn being disposed amongst the loop of soft twist yarns to provide a substantial support structure for said soft twist loops.

3. A pile fabric comprising a plurality of double separate loops of yarn woven as one, one of said separate loops being hard twist yarn and the other of said separate loops being soft twist yarn.

4. A floor covering loop pile fabric comprising a first plurality of separate loops of yarn having a predetermined number of twists per inch, and a second plurality of separate loops of yarn having a number of twists per inch different from that of the first plurality, said loops of different twists being substantially uniformly mixed and disposed over the fabric.

5. A floor covering loop pile fabric comprising a plurality of separate loops of soft twist yarn disposed substantially uniformly throughout the fabric and a plurality of separate loops of hard twist yarn interspersed substantially uniformly among the loops of soft twist yarns, the resilience of the loops of hard twist yarns providing a substantial support for the loops of soft twist yarns, thereby conserving an overall fullness for the fabric.

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