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B. L. SCHWARTZ

3,309,259

DOUBLE BACKED CARPET

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Fig. 1.

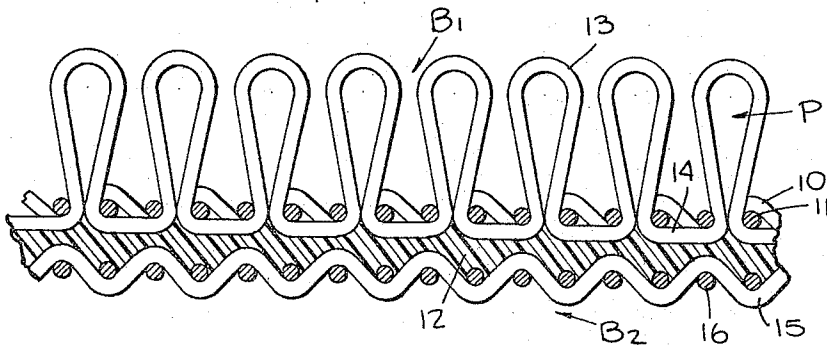


Fig. 2.

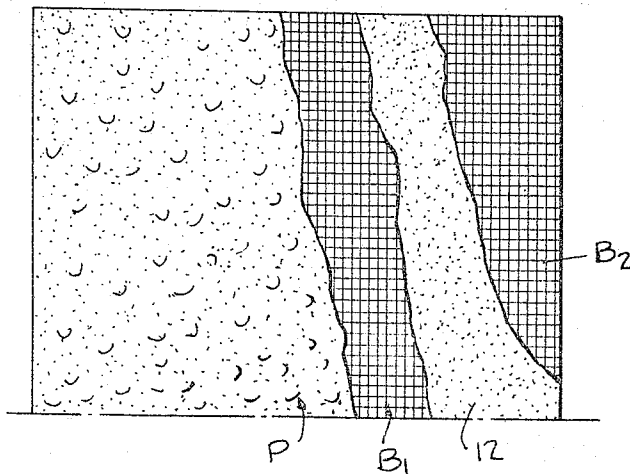
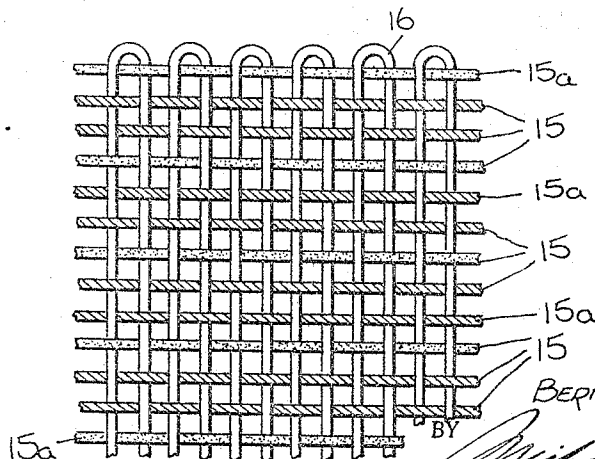


Fig. 3.



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DOUBLE BACKED CARPET

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2 Claims. (Cl. 161—67)

This invention relates generally to tufted and woven carpets, and more particularly to a double-backed carpet having improved dimensional stability.

Tufted fabrics, such as rugs, carpets, draperies and the like are manufactured by threading pile yarns through a ready-made woven backing to form pile loops. Backings commonly employed in tufted fabrics are made of woven material such as cotton duck or woven jute fibers. In the case of tufted carpets, a coat of latex is applied to the back which acts to lock the tufts to the backing fabric, to stiffen it and to make it skid-resistant.

In the manufacturing process, the woven backing is fed through a multiple-needle tufting machine. A row of needles carrying the pile yarns passes through the spaces in the backing and as the needles are withdrawn from the backing, looper members serve to hold the inserted yarns, thereby forming pile loops which project beyond the face of the backing. In the completed fabric the crests of the loops may remain connected or be severed, depending on whether a short loop pile or a cut pile fabric is desired.

The nature of the backing incorporated in the tufted fabric is a significant factor in determining the wearing and handling qualities of the finished product. Cotton duck, for example, is relatively light in weight and lacking in body. As a consequence, rugs fabricated with a cotton duck backing have a tendency to curl and are structurally unstable. These disadvantages also to some extent characterize rugs made with jute or Kraftcord backings, the finished fabric having an excessively soft feel or hand. For the rug to lie flat on the floor, it is essential that it possess a degree of stiffness so as to resist "kick-up" and curling. With conventional single backings, insufficient body is imparted to the rug and the rug has low resistance to buckling. Moreover, conventional backing materials are moisture-absorbent and tend to change dimensionally with changes in atmospheric moisture.

Woven carpets made on Velvet, Axminster, Wilton and similar looms also are lacking in dimensional stability.

Accordingly, it is the main object of this invention to provide a woven or tufted carpet with a double backing, the second backing or scrim imparting greater body to the carpet and having synthetic yarns woven therein to enhance the tensile, elongation and tear values of the scrim and thereby dimensionally stabilize the carpet.

More specifically, it is an object of the invention to provide a woven scrim for a double-backed carpet wherein the scrim makes use mainly of Kraftcord or jute yarn in combination with a small proportion of synthetic yarn in a ratio improving the dimensional properties of the woven fabric without adding substantially to the cost thereof.

A significant feature of the invention is that even though a relatively small portion of synthetic yarn is used in the scrim, its superior dimensional properties are imparted to the scrim and are the controlling factor in maintaining stability.

For a better understanding of the invention, as well as other objects and further features thereof, reference is made to the following detailed description to be read in conjunction with the accompanying drawing, wherein:

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FIG. 1 is a sectional view of a tufted carpet in accordance with the invention;

FIG. 2 is a plan view of said carpet, with components thereof cut away to expose the different layers; and

FIG. 3 is a plan view of the scrim in accordance with the invention.

Referring now to FIG. 1, a tufted fabric in accordance with the invention includes a preformed backing B_1 constituted by longitudinally extending warp threads 10 and transversely extending weft or filler threads 11. The warp and weft threads are loosely interwoven in any known manner on a loom. While a woven backing is shown, it is to be understood that the backing may be knitted or otherwise formed. Tufted into the backing is a pile yarn P which may be of cotton, wool, or any suitable natural or synthetic fiber.

The yarn is introduced in the usual manner by feeding the backing web through a tufting machine wherein rows of needles carrying the yarns pass them through the interstices of the backing to form chains of pile loops 13 projecting above the face of the backing, the pile loops being linked by connecting loops 14 closely drawn against the under-surface of the backing. The backing fabric is woven or otherwise formed of textile yarns, such as cotton, jute, rayon, or paper.

The under-surface of the backing is covered with a relatively thin anchoring coating 12 of a water-insoluble adhesive, such as latex. The adhesive is applied in a fluid state and flows freely into the spaces between the warp and weft threads to define a film-like coating which bonds the connecting loops to the backing threads. This latex coating is then cured, or if other forms of adhesive are employed, the coating is allowed to harden and set, as required.

Applied over the adhesive-coated surface of backing B_1 while it is still wet, is a second backing B_2 or scrim composed of longitudinally-extending warp threads 15 and transversely-extending weft threads 16. The scrim is woven from Kraftcord or jute yarns or a combination of both, and appropriate synthetic yarns. The synthetic yarns 15a are utilized in the warp direction and are spaced in alternate or other desirable patterns.

The purpose of the synthetic yarns is to enhance the tensile, elongation, tear, and dimensional values of the woven scrim. It is important that the synthetic yarns have low moisture absorbency, high tensile values in the order of fifteen pounds or greater, and moderate elongation values (2%—10%). Examples of suitable yarns are nylon, polypropylene, fiberglass, and others having comparable properties.

A typical scrim in accordance with the invention is one composed of twelve ends per inch of width, of which three or more would be of the selected synthetic yarn.

Tensile and tear values are enhanced in proportion to the additional yarn strength. Dimensional stability is improved in direct relationship to the synthetic yarn's resistance to changes in atmospheric moisture, for it has been found that the synthetic yarn's properties are the controlling factor in the woven fabric. Thus, while the scrim is composed mostly of Kraftcord or jute, it assumes the properties of the synthetic yarn, with resultant improvement in dimensional stability. Hence economies are effected to the extent that the less costly jute or Kraftcord is used for the bulk of the scrim, rather than expensive synthetic yarn.

While the scrim B_2 may be attached with conventional latex finishing techniques, such techniques have certain commercial drawbacks. Preferably, a resin coating is applied in liquid form to scrim B_2 by means of conventional roller coating techniques. Suitable resins for this purpose having proper softening points or molecular weights are petroleum resins, polyvinyl chloride and co-

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polymers thereof, polyvinylidene chloride and copolymers thereof, resin and resin derivatives, polybutene resins, and styrene-butadiene resins and copolymers thereof.

The scrim is coated with the resin in solution and dried to provide a non-tacky coated scrim. When the scrim is to be laminated to the carpet backing, it is simply heated to the softening point of the coating and combined under pressure with the backing. No preliminary back coating or latexing operation is entailed. Among the advantages of this operation are savings in adhesive and latex costs (hot-melt resins are cheaper), lower laminating costs (no dryers are necessary), and the fact that no adhesive will or can smear onto the front surface of the carpet.

To insure effective lamination, it is preferable that the resin coating on the scrim be of the same family as the synthetic yarns in the backing, and hence compatible therewith. For example, if the yarns are of the nylon family, the resin should be selected accordingly.

While there has been shown what is considered to be a preferred embodiment of the invention, it will be understood that many changes and modifications may be made therein without departing from the essential spirit of the invention as defined in the appended claims.

What is claimed is:

1. A double-backed tufted carpet comprising:

- (a) a first fabric backing,
- (b) carpet pile yarns tufted in said first backing and projecting from the top face thereof to form a carpet tread, the connecting loops of the pile yarns appearing on the rear face of said first backing, and
- (c) a second fabric backing adhesively secured to the rear face of the first backing and incorporating in-

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expensive yarns of natural woven material interwoven with a small portion of synthetic yarns of a material having relatively high tensile values and relatively low elongation values to impart dimensional stability to the carpet, said inexpensive yarns being selected from a group consisting of jute and Kraftcord, said synthetic yarns being contained only in the warp direction of said second backing and being selected from a group consisting of nylon, polypropylene and fiberglass material having tensile values in the order of at least 15 pounds and elongation values of about 2 to 10%.

2. A tufted carpet as set forth in claim 1, wherein said second backing is composed of twelve ends per inch of width, of which at least three are of said synthetic yarns.

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