Oct. 16, 1962 R. S. HAVNER 3,058,194

CARPET CUSHION AND BACKING FABRIC THEREFOR

Filed April 7, 1959

FIG. 1

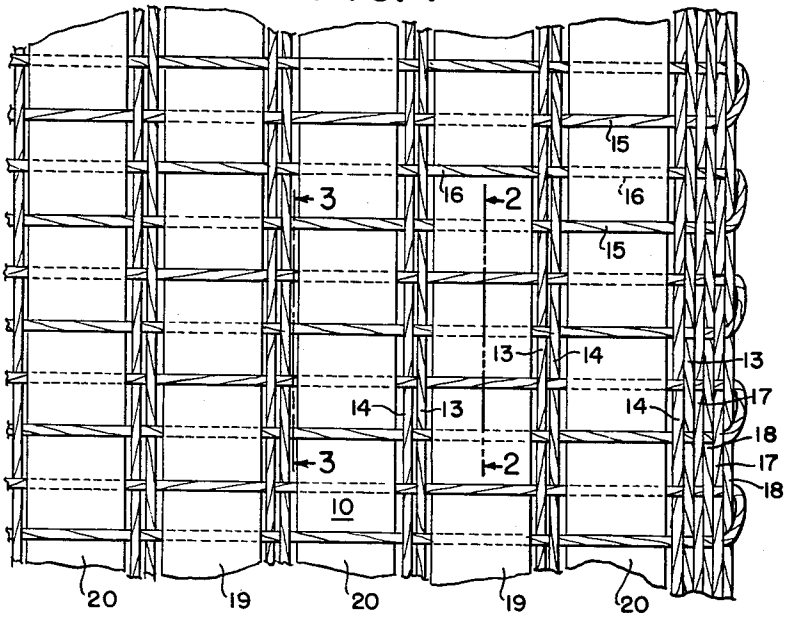


FIG. 2

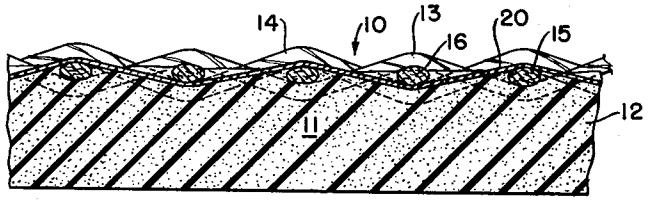
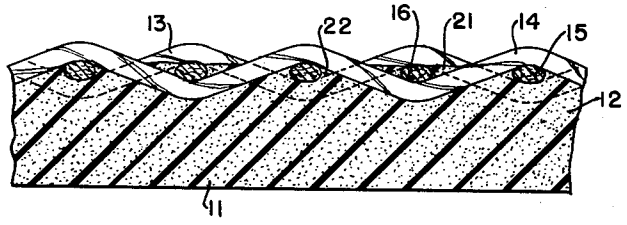


FIG. 3



INVENTOR
ROBERT S. HAVNER

BY
Ronnie, Edwards, Morton, Barrows & Taylor
ATTORNEY

United States Patent Office

3,058,194
Patented Oct. 16, 1962

3,058,194

CARPET CUSHION AND BACKING FABRIC THEREFOR

Robert S. Havner, 225 E. 46th St., New York 17, N.Y.

Filed Apr. 7, 1959, Ser. No. 804,798
1 Claim. (Cl. 28—80)

The present invention relates to an improved backing material for foam cushions, and more particularly to a novel and improved woven fabric adapted especially for use as a cushion backing. The invention also relates to foam cushions incorporating the new backing material.

In connection with the manufacture of foam cushions for carpeting, for example, it is conventional to provide a backing material, onto which a cushion material, such as foam rubber, is poured or adhesively secured. The backing material supports the cushion material during the pouring and curing thereof and, in the finished cushion, forms a top surface upon which a rug or carpeting may be laid. The backing layer imparts dimensional stability to the foamed cushion material and also provides, when the cushion is laid down for use, a surface over which the rug or carpeting may be slipped with relative ease.

Heretofore, it has been conventional to utilize for cushion backings a woven material, like burlap, which is formed of woven yarns of jute, for example. However, such materials have been becoming in progressively increasing short supply, to the point where, at the present time, it is difficult to obtain adequate quantities for day-to-day operations. In addition, the cost of such materials is becoming increasingly burdensome.

Certain alternative materials have been proposed, for use in cushion backing fabrics, one of which is yarn formed of twisted kraft paper. However, insofar as I am aware, such alternative materials have not proven to be satisfactory due, among other reasons, to high cost of manufacturing conventional fabrics of equivalent density.

In accordance with the invention, a novel and improved cushion backing fabric is provided which is so constituted, structurally, as to reduce greatly the amount of yarn required per unit of area. By reason of the substantial reduction in yarn requirements, materials such as jute may be used with greater convenience and economy but, advantageously, yarns formed of alternative materials, such as twisted kraft paper are employed. The new backing material is capable of substantially more economical manufacture than the conventional fabrics, and alternative materials, such as kraft paper, may be used to great advantage because of their ready availability.

In general, the new cushion backing fabric is comprised of widely spaced warp and filler yarns, and relatively wide, flat warp ribbons disposed between sets of warp yarns in a manner to provide a surface of a substantially continuous nature. Where the cushion material is to be poured onto the backing, the fabric may be provided with sufficient interstices to receive the poured material and form a mechanical interlock therewith. Advantageously, though not necessarily, the warp yarns are arranged in pairs, and between each pair extends a warp ribbon. The ribbons may be in the range of about one-fourth to one-half inch in width, for example, and in some cases even wider, so that, in the completed fabric structure, there may be in the order of four warp yarns per inch of fabric width. In addition, the fabric structure accommodates substantial spacing of the weft or filler yarns, which may be about one-eighth inch to one-fourth inch apart, for example.

The new fabric presents a substantially continuous surface, notwithstanding the wide spacing of the yarns, by reason of the incorporation of wide warp ribbons in the

structure. The completed fabric has strength and dimensional stability which is wholly adequate for the intended end use, and the fabric has a unique and pleasing appearance, which may be heightened by utilizing contrasting colors for the yarns and ribbons.

In the manufacture of the new fabric, conventional looms may be employed, with minimal modification of the heddles, for example, to accommodate the wide warp ribbons. Operation of the equipment is, in fact, substantially simplified, by reason of the substantial reduction in the required yarn supplies.

For a better understanding of the invention and for a further discussion of the above and other advantageous features thereof, reference should be made to the following detailed specification and to the accompanying drawing, in which:

FIG. 1 is a fragmentary plan view of a rug cushion or the like incorporating backing fabric according to the invention; and

FIGS. 2 and 3 are cross-sectional views taken along lines 2—2 and 3—3, respectively.

Referring now to the drawing, the reference numeral **10** designates, generally, the new fabric, which is incorporated in and forms the top surface of a rug cushion **11**, the lower portion of the cushion advantageously comprising a layer **12** of foamy, resilient material, such as foam rubber. In accordance with the invention, the fabric **10** is a woven fabric comprising warp threads **13**, **14**, which, in the illustrated fabric, are arranged in pairs and spaced across the width of the web. Where desirable or expedient, the warp yarns may be made somewhat heavier and arranged individually, instead of in pairs, as will be understood. Each pair of warp yarns in the illustrated fabric comprises one thread of each of two sets, and the pairs are spaced widely apart in relation to yarn thickness, on centers of, for example, about one-fourth to one-half inch or more. Extending widthwise of the fabric are weft or filler yarns **15**, **16**, which are returned at the edges of the web and form with pairs of edge warps **17**, **18**, a selvedge. Advantageously, the filler yarns are spaced apart, lengthwise of the fabric, about one-eighth to one-fourth inch.

Extending lengthwise of the fabric, between the pairs of warp yarns **13**, **14**, are warp ribbons **19**, **20** formed of wide, flat material, such as kraft paper, having a basis weight of about 60 pounds. In accordance with the invention, the warp ribbons are of substantial width in relation to the thickness of the yarns and, by way of example, the ribbons may be in the range of about one-fourth to one-half inch or more in width, while the yarn thickness may be on the order of one thirty-second inch.

Although kraft paper of 60 pound basis weight is presently deemed most suitable for the warp ribbons, lighter or heavier materials may be used where desirable or expedient. By way of example and not of limitation, a range of basis weight extending from 30 to 90 pounds should be suitable for most applications. The heavier paper may be desirable where, for example, it is intended to employ chain conveyors in the manufacturing process. In addition, in such cases, it may be desirable to employ a paper having a fair amount of wet strength, as well as a special finish.

In the illustrated fabric, adjacent warp ribbons **19**, **20** are of different sets. That is, the ribbons **20** pass over the filler yarns **16** and under the filler yarns **15**, while the ribbons **19** pass over the yarns **15** and under the yarns **16**. Adjacent ribbons thus pass alternately over and under the filler yarns in opposite relation. Likewise, the yarns **13**, **14** of each pair, each being of a different set, pass alternately over and under the filler yarns **15**, **16** in opposite relation. In addition, the warp yarns

weave in opposition to the nearest warp ribbon, so that the warp yarns directly adjacent a particular ribbon are of the same set. By way of example, the ribbons **19** are flanked by warp yarns **13**, while the ribbons **20** are flanked by yarns **14**.

Advantageously, the weave of the fabric is fairly open, as indicated in FIG. 1, to provide small interstices between the warp threads and ribbons. These interstices are relatively small in relation to the surface expanse of the fabric, however, so that a substantially full or continuous supporting surface is presented.

The selvedge or edge warps may be of any convenient number, to provide a satisfactory edge structure and, if desired, certain of these warp yarns may be colored to provide for distinctiveness or identification.

As will be observed, the backing fabric **10** has a minimum of yarns in relation to fabric area and, advantageously, about four yarns per inch, in both directions, may be provided, although about two warp yarns per inch may suffice if single yarns, rather than pairs, are used between warp ribbons. In view of such sparing use of yarns, it is practical and expedient to form the yarns of a twisted kraft paper which may have an open width of, for example, one-fourth inch. Advantageously, the yarn has a minimum amount of twist, providing for economy of manufacture.

The new fabric may be manufactured by conventional weaving techniques, in plain or other weave, with only minimal and simplified alterations being required of the looms. The heddles and reeds are, of course, opened up where necessary to accommodate the wide warp ribbons. The creel may be simplified substantially, due to the great reduction in the number of warp yarn supplies and, advantageously, the warp ribbons may be supplied from slit rolls straight off the cutter bar or from separate pads supported in front of the creel, preferably below the yarns for ease of access.

The manufacture of rug cushions using the new fabric may be carried out in the conventional manner, either by pouring the cushion material over the fabric, leveling the material at an appropriate thickness, say one-fourth inch, and curing the material, or by adhesively securing a preformed layer of the cushion material to the backing. When poured over the backing fabric, the cushion material is in a viscous state, so that it enters the interstices between the warp yarns and ribbons and becomes mechanically interlocked with the fabric. The poured cushion layer is illustrated in representative fashion in FIGS. 2 and 3, and it will be observed therein that portions of the cushion material extend through the fabric interstices adjacent the fabric-cushion interface, to form interlocks, as indicated at **21**, **22**, for example. The backing fabric forms a support for the cushion material during the pouring thereof but, when the cushion is in use, the backing fabric comprises the top surface thereof. The foamy material grips the floor well, and provides a soft base or cushion pad, while the backing fabric imparts desirable dimensional stability to the cushion material and also provides a top surface over

which a rug or carpet may be slipped for adjusting its position.

One of the outstanding advantages of the invention resides in the low cost of the backing fabric in relation to known fabrics used for the same purpose. Thus, the new fabric has a cost basis in the region of 21%–34% below conventional jute fabrics. Rug cushions incorporating backing fabrics of the new type, made of kraft paper yarns and ribbons, also have improved physical characteristics, resulting from the substantial dimensional stability of the paper elements of the fabric. Thus, in addition to improved stretch resistance, the new cushion is highly resistant to wrinkling, buckling and to the formation of scalloped edges, all of which cause substantial problems in the laying of carpet with known cushions. The new fabric is also readily made to substantial widths, such as 9′–12′–15′, enabling the manufacture of seamless cushions to such widths.

It should be understood that the specific forms of the invention herein illustrated and described are intended to be representative only, as certain changes may be made therein without departing from the clear teachings of the disclosure. By way of example only and not of limitation, it may be advantageous to utilize creped paper for the warp ribbons, affording a degree of resiliency to facilitate weaving and to provide improved adherence to the foam cushion material. Accordingly, reference should be made to the following appended claim in determining the full scope of the invention.

I claim:

The combination of a fabric and foam cushion material, said fabric comprising warp threads spaced at least one-fourth inch apart across the width of the fabric, filler threads extending widthwise of the fabric and spaced lengthwise thereof, said threads being formed of twisted kraft paper, and relatively wide flat warp ribbons formed of kraft paper having a basis weight in the range of about 30–90 pounds, said ribbons extending lengthwise of the fabric between said warp threads and being generally of the same width as the spacing of said warp threads, said warp threads passing alternately over and under the filler threads, the weave of said fabric being relatively loose to form interstices between adjacent threads and ribbons, said foam cushion material having portions which interlock with the threads and ribbons of the fabric in the region of the fabric-cushion interface and in the regions of said interstices between said adjacent threads and ribbons.

References Cited in the file of this patent

UNITED STATES PATENTS

1,999,044	Frank	Apr. 23, 1935
2,312,200	Teague et al.	Feb. 23, 1943
2,317,595	Faris	Apr. 27, 1943
2,628,654	Alderfer	Feb. 12, 1953

FOREIGN PATENTS

181,228	Germany	Feb. 19, 1907
22,733	Great Britain	Feb. 6, 1913