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STRETCHABLE FLOOR COVERING
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STRETCHABLE FLOOR COVERING

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This invention relates to floor covering, and more particularly to an inexpensive but durable floor covering having a wear surface of thin elastic fabric bonded to a backing pad of resilient material which is several times thicker than the wear surface.

To provide satisfactory comfort and wearing qualities, a floor covering must be thick enough to cushion the force of the blows it receives in use, but the wear surface must be of such a nature that it is not strained unduly during this cushioning action. Heretofore the ordinary carpet has consisted of a wear surface of comparatively long cut or uncut resilient pile yarns which are firmly secured to a ground fabric. The pile forms a soft yielding wear surface which cushions the pressure exerted on the floor covering. To provide additional comfort in use, this carpet is frequently placed over a soft under pad formed of felt, jute, hair or rubber. Although carpets of this type wear well and are comfortable, they are costly, and because the piles must be resilient, they cannot be formed of textiles which have a tendency to become matted in use. Furthermore, when placed over a resilient backing pad, the ground fabric is subjected frequently to excessive strain, for it does not stretch as it is forced into the under pad.

The present invention contemplates a floor covering which resembles ordinary carpet in appearance, and which compares favorably with it in comfort and wearing qualities, but is less expensive than the ordinary carpet and does not have the usual long pile wear surface. Rather the floor covering of the present invention has a wear surface formed of a thin woven, knitted or other stretchable fabric which is secured to a resilient backing pad that is several times as thick as the wear surface. Elastic fabric suitable for the wear surface of my floor covering are well known in the art, and are commonly formed by coating a condensed fabric with rubber, or by calendering a rubber sheet onto a condensed fabric. My U. S. Patent 2,233,274 or the U. S. patent to Foster 2,450,948 disclose methods of making fabrics suitable for the wear surface of my improved floor covering. Since the wear surface is formed of an elastic fabric, it yields under strain without damage to the yarns forming this surface, and in yielding it cooperates with a backing pad to cushion the blow received by the floor covering. Inasmuch as my floor covering does not require long pile yarns in the wear surface, the textile fabric of the wear surface can be formed on conventional knitting or weaving machines with great economy in manufacture. Further, because the wear surface is made of thin textile fabric, textiles such as cotton which become matted and therefore have not heretofore been suitable for use in floor coverings, may be utilized in its manufacture.

Accordingly it is an object of my invention to provide a floor covering having a thin elastic wear surface bonded to a resilient backing pad several times thicker than the wear surface.

It is a further object of my invention to provide an inexpensive but durable floor covering having a thin elastic wear surface which is free of the conventional long piles.

These and other objects of my invention will become apparent from the following description when read in conjunction with the accompanying drawings wherein:

Fig. 1 is a perspective view partly in section of the floor covering of the invention; and

Fig. 2 is a sectional view of the floor covering illustrating the effect of the application of a localized vertical force thereto; and

Fig. 3 is a plan view of the floor covering illustrating the effect of the application of a localized horizontal force thereto.

Referring to Fig. 1 of the drawing the floor covering comprises a thin layer of elastic fabric bonded by means of a layer of elastic cement to a resilient backing pad. The elastic fabric may be of any suitable construction and may be made elastic by any suitable process such as those referred to above. These elastic fabrics are formed with either one-way or two-way stretch as desired, i.e., the fabric may be stretchable either longitudinally or transversely, or both longitudinally and transversely. Since the one-way stretch fabric yields to forces applied from all directions save one, in certain applications where the wear is predominantly in one direction, for example in theatre aisles, the fabric having a one-way stretch may be suitable or desirable. For general application however a two-way stretch gives superior wear and this is the preferred construction. The elastic fabric is shown in Fig. 1 as having a flowered design, but it may be provided with any ornamental design desired.

Fig. 2 illustrates the effect on the floor covering of the application of a vertical force thereto. In the figure the floor covering is shown supported by a floor. A localized vertical force in the form of a chair leg pressing thereagainst is applied to the floor covering. As shown in this figure, the wear surface yields to the force.
and stretches, while the under pad 12 is compressed and resiliently resists the force. The force is therefore cushioned, partially by the elastic fabric and largely by the under pad. There are many materials suitable for this under pad such as felt, hair rubber, etc., but since sponge rubber possesses greater resiliency and retains its resiliency longer, I prefer it for the under pad. Sponge rubber is of two types, foam and blown, but for ordinary usage blown is preferable for it is more resistant to compression than foam. As this figure shows this under pad is several times thicker than the wear surface layer, and the overall thickness may be approximately that of conventional carpeting, which is sufficient thickness to provide a comfortable cushioning action. If an inelastic fabric were used for the wear surface layer, the yarns of the fabric would be subjected to great wearing strain as the wear surface is forced into the backing pad. Since the wear surface of my floor covering is elastic the wearing action of this vertical force is largely dissipated in the floor covering of the invention. Referring to Fig. 3 the effect of a frictional force on the floor covering of the invention is illustrated by the chair leg 14 being moved across the wear surface in the direction of the arrow. As shown in this figure the transverse yarns at A and B are elongated to yield this force, the longitudinal yarns similarly would yield to the strain. In normal usage a major portion of the wear to which a floor covering is subjected is of this type, for the foot frequently strikes or leaves the wear surface with a sliding motion. The ability of the elastic fabric of the wear surface of the floor covering to yield to both horizontal and vertical forces, and in conjunction with the resilient backing pad, to cushion these forces without undue strain on the fibers of the fabric, permits the construction of a practical floor covering having a thin layer of fabric in the wear surface. It will be appreciated that any suitable bonding cement can be used for the layer 14. However since it must maintain a bond with the elastic fabric 10, it should have an elasticity in the dried state equal to or greater than the elasticity of the fabric 10. A suitable bonding cement would be a solvent rubber or latex adhesive. A wear surface which is stretchable only within narrow limits will to some extent produce improved wearability over one which is not. For best wear however, a fabric is used for the wear layer which has an elasticity in the range of 15 to 50%, i.e. the fabric should be capable of being stretched to a stressed length of 115 to 150% of its unstressed length and then of returning to its original length by its own elasticity. Although the thickness of this wear surface is not critical to the invention, for a thick wear surface would have a comparatively longer life if made of elastic fabric, I prefer to use a fabric for the wear surface which is not more than 0.5 inch thick, for a surface of this thickness gives satisfactory wear when secured to a much thicker backing pad, and admits of economies of manufacture. From the foregoing it will be apparent that I have invented a durable floor covering which compares favorably in comfort and wearing qualities to a good grade carpet, yet which is much less expensive than such carpet.

It is to be understood that the above described embodiment is for purposes of illustration only, and modifications may be made therein without departing from the spirit or scope of the invention. Accordingly I do not desire to be limited by the foregoing description, but only by the scope of the appended claims.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. A textile surfaced floor covering, comprising a thin wear surface layer of elastic fabric and a resilient backing pad several times as thick as said fabric bonded to the fabric, and together forming a composite floor covering in which the surface layer of elastic fabric will stretch and contract locally at least 15% in use.

2. A textile surfaced floor covering, comprising a thin wear surface layer of elastic fabric having an elastic stretch both transversely and longitudinally in the range of 15 to 50%, and a sponge rubber backing pad several times as thick as said fabric bonded to the fabric whereby said fabric will stretch upon the application of force thereto.

3. A textile surfaced floor covering, comprising a thin wear surface layer of elastic fabric having an elastic stretch of at least 15%, a blown rubber backing pad and an intermediate layer of elastic cement bonding said fabric to said pad, the overall thickness of said floor covering being sufficient to cushion forces applied thereto.

4. A textile surfaced floor covering, comprising a wear surface layer of elastic fabric not more than 0.5" thick having an elastic stretch of at least 15%, a blown rubber backing pad, and an intermediate layer of elastic cement bonding said fabric to said pad, whereby said surface layer will stretch upon the application of force thereto.

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