This invention relates to fabric floor coverings, such as rugs, carpeting, and the like and, in particular, it relates to fabric floor coverings having means incorporated therein for the purpose of preventing or removing an accumulation of static electricity in a body contacting the covering when moving across it.

It is well recognized that as a person walks on a rug there is likelihood of a resulting accumulation of static electricity in or on the body and that this accumulation of electricity is discharged when the person touches an electrically conducting body. In some cases the amount of static generated reaches such proportions as to be definitely objectionable. In any event, this static generating condition is always a source of annoyance, and its effect on different people varies in accordance with the temperaments of the particular individual. Static generated from rugs is usually increased as the relative humidity is decreased, thus accounting for the more noticeable effect of static during the winter months.

In the practice of our invention we provide a fabric floor covering illustrated as a rug, having electrically conducting elements extending from the top to the under side of the rug, in combination with electrically conducting means located at the under side of the rug for the purpose of dissipating a static charge.

Among the objects of our invention are to provide a rug having static dissipating characteristics for the purpose of eliminating the annoyance of static shock; to provide in a rug an electrically conducting means which is resilient, and which does not detract from the appearance of the rug; and to provide conducting means which may be incorporated with rugs efficiently and economically. Other objects and advantages will appear more obvious in the following detailed description considered in connection with the accompanying drawing, in which:

Fig. 1 is a perspective view of a portion of a rug embodying features of our invention;

Fig. 2 is an enlarged end view of a portion of the rug shown in Fig. 1;

Fig. 3 is a similar view of a modified rug; and

Fig. 4 is a similar view of a further modified rug.

Referring to the drawing and, in particular, to Fig. 1, we show a rug 1 of conventional type, consisting essentially of a woven backing 2 from which a pile or nap 3 extends. To provide an electrically conducting medium extending from at least occasional points at the top surface of the rug to a point located at the under side of the backing 2, we provide a cord, yarn or thread 4, treated to make it electrically conducting, in the rug. The cord 4, which may be formed of cotton or other material, is threaded through the rug and along the under side of the backing 2 and again upward to the top surface of the nap or pile 3. The ends of the treated cord 4 preferably terminate at the top surface of the rug as formed by the nap 3. The spacing of these cords is indicated in Fig. 1, and the exposed ends are preferably about two inches apart, although good results have been obtained by spacing the cord ends four or more inches apart.

After the cords 4 are drawn through the thickness of the rug, the under side of the rug is treated to render it electrically conducting. For this purpose a coating 5 of a rubber composition containing electrically conducting carbon black is applied to the under side of the backing 2.

As an example of a material for rendering the cords 4 and the under side of the backing 2 electrically conducting, we prepare a solution of a rubber composition containing the following ingredients:

- Rubber
- Zinc oxide
- Antioxidant
- Accelerator
- Deodorant
- Stearic acid
- Sulfur

These ingredients are reduced to a cement and 21 pound of this cement is dissolved in 1 gallon of gasoline to which 14 pound of acetylene carbon black is added. The cords 4 may be treated by dipping into this solution and drying to form a deposit on them. The coating 5 on the under side of the backing 2 may be applied by any conventional means such as painting or spraying.

In place of the cement as above described, a latex conducting solution may be prepared, having ingredients, for example, as follows:

- Parts by weight

  60% latex
  Dispersing agent
  Activator
  Accelerator
  Casein
  Ammonia
  Sulfur
  Acetylene carbon black
  Water

  166.07
  4.25
  2.5
  0.75
  10.0
  0.9
  2.5
  2.0
  2,033

The sulphur, activator, accelerator, and dispers-
ing agent are mixed together with water and added to the latex containing a dispersing agent. The remaining ingredients, mixed separately, are added to this solution and water is added to reduce the solution to a proper consistency. Coatings of this conducting solution may be applied to the yarns, cords, or sheeting material by operations such as dipping, painting, or spraying.

As the cords 4 are exposed at the under side of the backing 2, they engage with the layer of conducting rubber 8 on the backing 2 and an electrical connection is formed therebetween. By this arrangement static electricity which is generated on or in a body passing over the top of the rug, which body forms a contact with one or more of the cords 4, passes through the treated cords 4 and becomes dissipated in the layer of conducting rubber 8. The cords 4 do not of themselves dissipate a static charge unless they engage with the conducting medium 9 underlying the rug and having a capacity sufficiently great to absorb the electrical charge. The layer of conducting rubber composition 8 functions as a condenser and has a sufficiently great capacity to receive and then dissipate accumulation of static by leakage. By spacing the conducting elements or cords 4 throughout the area of the rug, the static is not only discharged from a body contacting the rug, but no substantial accumulation of static is possible because of the frequent placement of the conducting elements which pass through the rug.

It is to be understood that beneficial effects may be obtained by treating portions, such as edges, of the rug in case it is not desired to treat the entire exposed surface of the rug. It is also to be understood that the rug may be electrically grounded by electrically contacting with any conducting body. Also, the rug may be mounted on a padding, or the like, so long as there is a conducting layer 6 in contact with the threads 4.

In Fig. 3 there is illustrated a modification of the rug in which single threads 4 are threaded through the rug and provided at their lower ends with knots 7, which engage with the conducting layer 6.

In Fig. 4 there is illustrated a further modification of the invention in which certain tufts 8 of the fabric itself have been treated to render them electrically conducting. These tufts engage the backing 5.

Tests have demonstrated that with a rug in which one-half was treated in accordance with the present invention and the other half remained in its conventional state, sparks as long as one-half inch could be produced when the individual walked over the untreated portion of the rug and touched a metal object, while no evidence of a static discharge was apparent when the same individual walked over the treated portion of the rug and touched a similar metal object.

While in the present application reference is made to a rug, it is intended to use the word "rug" in its broad sense to include carpets, carpeting, mats, sheet material, or other types of floor coverings formed essentially of textiles or a vegetable, animal, or synthetic origin.

As thus shown and described, it is believed apparent that we have provided a unique and efficient means for discharging accumulation of static, and while we have shown preferred embodiments of our invention, it is to be understood that it is susceptible of other modifications, as appearing within the scope of the appended claims.

Having thus shown and described our invention, what we claim and desire to protect by Letters Patent is:

1. A rug, a coating of a flexible electrically conducting material adhered to at least a portion of the under side of the rug, and a plurality of electrically conducting elements comprising textile material and an electrically conductive rubber composition contacting said coating and extending to substantially the top of the rug.

2. A rug having a plurality of electrically conducting elements of rubber composition extending from the top to the under side of the rug and a layer of electrically conducting rubber composition engaging the under side of the rug and the elements and serving to dissipate static electricity adjacent the rug.

3. A rug having a plurality of electrically conducting elements comprising spaced textile units extending from the top to the under side of the rug and a layer of electrically conducting composition engaging the under side of the rug and the elements and serving to dissipate static electricity adjacent the rug.

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