

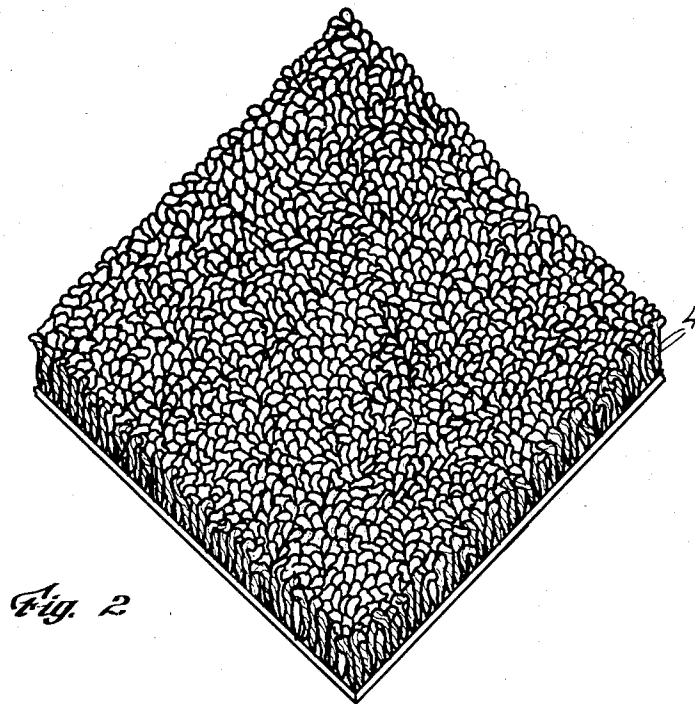
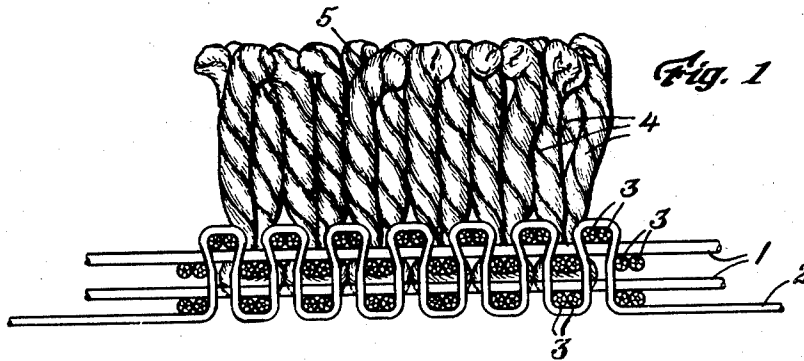
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2,509,352

AXMINSTER PILE FABRIC

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AXMINSTER PILE FABRIC

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1 Claim. (Cl. 139-401)

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Our invention relates to Axminster pile fabrics, carpets, or rugs, having pile tuft legs which are abnormally tightly twisted and form a pile, which fully covers the backing fabric and has the soft texture required in Axminster pile floor coverings, and in which the twist is permanent, i. e. unaffected by wetting, as in washing and shampooing.

According to our invention we employ as the pile yarn to be woven in an Axminster pile fabric loom hard twisted, set, wool yarns which, when free from tension, i. e. relaxed, coil into kinks and are so treated as to form a soft texture pile of twisted, swollen tuft legs which effectively cover and conceal the backing fabric.

In the drawing Fig. 1 is a partial warpwise cross section and Fig. 2 is a top perspective view of a piece of the fabric.

The hard twisted, set, kinky wool yarn may be produced by any suitable process, but we prefer the following as producing a yarn which is best adapted to form our desired pile. The wool, with or without other fibers, is dyed in the raw stock, processed and spun into strands in the usual way. The strands, which may have from two to five turns per inch, are twisted abnormally, i. e. about ten turns to the inch, and reeled into skeins. The skeins are removed from the reels, whereupon the abnormal twist in the yarn causes it to coil upon itself and form kinks. The twist is set by immersing the skeins of twisted and kinked yarn, relieved of tension, in water, with or without a wetting agent, and after excess water is centrifugally removed, the skeins are subjected to steam, preferably at about 260° F., for about 30 minutes in a closed chamber in which the pressure is maintained at about 15 pounds per square inch above atmospheric. The resulting wool yarn is hard twisted, set and kinky, and in this condition could not be employed, as pile yarn, in an Axminster loom.

We then apply sufficient tension to the yarn to straighten out the kinks and wind the yarn in such tensioned, straightened condition on spools preferably having perforated cores. We prefer to wind the yarn in a dry state, as we have found that it has then higher tensile strength and the winding may be accomplished more efficiently, but the yarn may be wound wet if desired. The yarn on the spools is under a strain which, if the tension were relaxed, would cause the yarn to kink. We next wet the unkinked spooled yarn in water, preferably hot to accelerate the process, or by steam, and then dry it by any suitable means. The use of spools with perforated cores

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expedites the drying. The dried unkinked yarn has its original abnormal twist, but the strain, which formerly would have caused the yarn to kink, has been substantially removed or relieved so that the yarn when now relieved of tension, as by unwinding from the spools, does not kink.

We wind the yarn on the spools of an Axminster loom. In this unkinked condition the yarn ends are readily drawn through the tubes of the Axminster loom, uniformly laid against the reed and pushed up into the shed by the upward movement of the comb in conventional Axminster weaving.

We wet the woven fabric with water or steam whereby the legs of the pile, while retaining their twist and their tendency to kink, become soft and expand or swell. After the fabric is dried its pile surface has the desired soft texture and the pile legs are sufficiently swollen thoroughly to cover and conceal the backing fabric. This is in striking contrast to the condition of the pile of the woven fabric before this wetting treatment when the legs of the pile are thin and wiry so that the pile surface has a harsh texture and the backing fabric may be seen through the pile. The wetting can be done satisfactorily by immersing the fabric in hot or cold water or by spraying it with hot water, but we prefer to steam the fabric for about ten minutes at 90° to 100° C. We have found water to be a satisfactory liquid for wetting the pile, but other liquids may be used and wetting agents, if desired, may be added to the water or other liquid. The drying of the fabric may be carried out by any suitable apparatus, preferably in a drying chamber through which hot air is circulated.

Our finished Axminster fabric has a permanently set, swollen twisted pile which retains its twist when the fabric is wet or shampooed. Due to the hard twist, the pile legs contain bends and curves particularly near their free ends, instead of extending straight up from the backing.

In Fig. 1 the backing of the fabric is typical of the Axminster weave having stuffer warps 1, ground warps 2 and double wefts 3 laid by the usual needle. The pile legs 4 have a permanently set twist and occasional bends or curves 5. Fig. 2 shows the surface of the pile which has an irregular pebbly appearance due to the character of the tuft legs.

This application is a continuation-in-part of our application, Serial No. 708,444, filed November 7, 1946, for Axminster pile fabrics and process of producing same.

We claim:

An Axminster pile fabric having an Axminster backing and a cut pile face, said backing comprising stuffer warps, ground warps and double wefts, and said pile face having at least a portion thereof formed of cut pile comprising upright tuft legs of hard twisted wool yarn having a hard twist permanently set with kinks, said legs being at randomly angularly disposed relation to one another, having occasional non-uniform bends therein and presenting an uneven pile surface consisting of irregularly disposed tuft leg ends, which presents an irregular pebbly appearance.

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