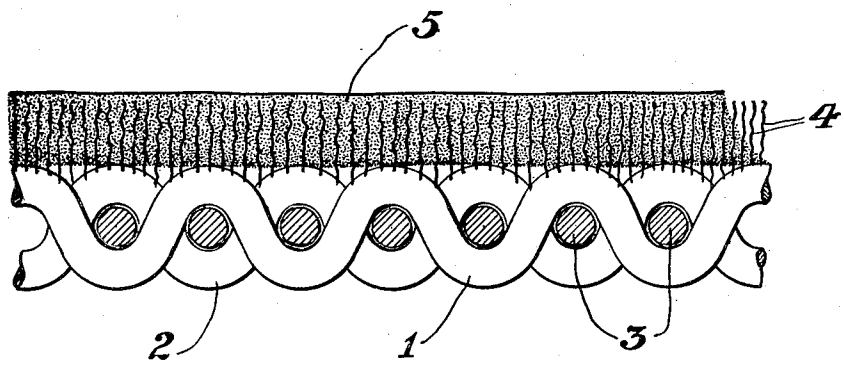
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COATED FABRIC AND PROCESS OF MAKING SAME.

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1,425,307. Patented Aug. 8, 1922.



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To all whom it may concern:

Be it known that I, JOHN A. WILSON, residing in Elizabeth, New Jersey, have invented certain new and useful Improvements in Coated Fabrics and Process of Making Same, of which I declare the following to be a full, clear, and exact description.

This invention relates to a coated fabric and a process of making coated fabrics. More particularly the invention relates to a coated fabric of the type known as artificial or imitation leather and which comprises a fabric base and a coating of suitable composition which may be finished in any desired manner by graining or embossing so as to present a surface having the appearance of genuine leather.

Ordinarily fabrics of this type have been formed by applying the coating directly to a woven surface of the fabric base, the coating being held on and attached to the warp and weft of the fabric base by the adhesion between the surfaces of contact between the coating and the fabric base. As a result, the strength and tenacity of the attachment or bond between the coating and the fabric base has been comparatively weak and offered but slight resistance to the splitting, scaling, blistering and peeling of the coating from the fabric base particularly when the fabric is sharply bent or flexed. Coated fabrics of this type therefore soon become worn and unsightly and, moreover, owing to their close contact with the threads of the base fabric do not have the pliability, flexibility, and resiliency which make genuine leather so suitable and desirable for many purposes.

An object of the present invention is to provide a coated fabric having an attachment between the fabric base and the coating which extends into said coating beyond and independent of the relation between the adjacent surfaces of said coating and said fabric base.

A further object of the invention is to provide a coated fabric having the pliability and surface texture, resiliency, feel, durability, and other desirable qualities of real leather.

A still further object of the invention is to provide a process of making coated fabrics or artificial leather in such a manner as to tenaciously attach said coating to said fabric base.

With these and other objects in view the invention comprises the process and product described in the following specifications and defined in the claims. The invention is illustrated in the accompanying drawing in which an enlarged, somewhat diagrammatic, cross section of a coated fabric embodying the invention is shown.

In the present invention the coating is attached or tied to the fabric base by innumerable small fibres or threads which are partly embedded in said coating and are secured or anchored in the body of said fabric. To this end there is provided a fabric base 1 having warp threads 2 and weft thread 3, and having on the side to be coated a short nap which is composed substantially of fibres or threads 4 partly bound or woven into the body of the fabric base and partly projecting outwardly a short distance from the surface of the fabric to which the coating is to be applied. A suitable coating 5 comprising pyroxylin, cellulose ester, or other suitable composition is applied to the nap in such a manner as to embed and cover the projecting portions of the fibres composing the nap to an extent sufficient to securely tie or anchor said fibres in said coating and to thereby form a tenacious attachment between the fabric base and the body of said coating, independent of the contact or the strength of adhesion between the adjacent surfaces of said coating and said fabric.

In preparing the fabric for coating according to the present invention, a nap may be provided on the side of the fabric base to be coated by any means by which a suitable short nap securely fastened to the base may be formed either at the time of weaving or subsequently thereto. In the preferred embodiment described in the present specification a nap is raised by carding or other napping means known in the art. A napped surface formed in this manner is composed of an infinite number of small fibres of various lengths which are, to a greater or less extent, torn from the threads making up the fabric base or other threads interwoven therewith. Some of these fibres are completely or very largely torn away from the threads of the fabric and are only loosely

retained on the surface of the nap as a mat or loose overlying mass loosely enmeshed with the projecting ends of fibres which may be more firmly held or anchored in the fabric. These comparatively loose fibres rest on and cover the surface of the nap and, if the fabric were now coated, would receive the coating and, acting as a filter, would oppose its penetration to the underlying firmly anchored fibres. A coating applied to the nap in its unshortened condition would therefore be carried on a surface which would in turn be but loosely attached to the ground fabric and which might be pulled or stripped from the ground and subjacent short nap with little, if any, greater resistance than from an unnapped surface.

To remove these fibres and strengthen the nap, the nap is shortened as by singeing its surface leaving exposed a shorter, stubble like, nap which is made up of fibres bound in the threads of the fabric and having short, strong portions extending transversely from the plane of the cloth to a distance determined by the singeing operation. The singeing of the fibres may be accomplished by gas flames or any device by which the outer surface of the nap is charred or burnt without charring or injuring the underlying fibres which form the resulting short nap. The free end of each fibre of the nap is accordingly exposed to the coating operation in such a manner as to permit the coating material to penetrate the nap to an extent sufficient to embed the extending portions of the fibres.

One or more coatings of suitable material are thereupon applied in a fluid state to the shortened nap by any suitable coating or spreading means known in the art and the coating may consist of any desired composition in accordance with the type and quality of surface desired. A feed trough, supplying a continuous film to the short nap, cooperating with a doctor blade adjusted to maintain the desired thickness of coating has been found satisfactory for the application of the commonly used coating compositions. Very desirable results have been obtained by the use of a coating composition composed of a solution of pyroxylin in a suitable solvent and containing the necessary pigments to give the desired color and finish and a vegetable oil sufficient to obtain the desired degree of flexibility and pliability. Upon the evaporation of the solvent a firm, flexible coating of pyroxylin, oil and pigment is formed upon and united to the sheared napped surface. An additional harder surface coating may, if desired, be applied on the embedded coating if a harder wearing surface is desired. In place of a pyroxylin composition, a suitable rubber composition may be substituted. After the coating has been applied it may be finished by graining or embossing in the manner well known in the art.

The coated fabric obtained in this manner may be distinguished from the common type of coated fabric in which the coating is applied directly to the fabric base or from fabrics in which a coating has been applied to a comparatively long or unshortened nap, in that the fibres of the nap are embedded transversely in the coating and are firmly held in the fabric base by being wound, or otherwise bound, into the threads of which the fabric base is composed. These fibres, which are partly embedded in the body of the fabric base, serve to form innumerable short, direct connecting links or bonds between the body of the coating and the body of the fabric base and thereby serve to hold the two closely together independently of the adhesion or separation of the adjacent surfaces of the fabric and coating and independently of the condition of said coatings. The coating cannot be torn or stripped from the fabric without breaking these bonds, which owing to their number, offer great resistance to rupture. A greater choice in the selection of a coating composition is thereby made possible since the limitations imposed by the requirement of adhesiveness to the base fabric are removed. Moreover a certain flexibility between the coating or coatings and the fabric base is made possible without sacrificing strength or wearing qualities which permits the attainment of the pliable, resilient quality characteristic of excellent genuine leather.

I claim—

1. A coated fabric comprising a fabric base having a singed nap imbedded in a coating of suitable composition applied thereto.

2. A coated fabric comprising a fabric base having a singed nap and a coating of suitable composition carried by and anchored to the singed nap.

3. A coated fabric comprising a fabric base having a singed nap, and a coating of suitable composition applied to the singed nap and covering the upper surface thereof.

4. A coated fabric comprising a fabric base having a singed nap and a coating containing a cellulose ester applied to said fabric base, so that the singed nap of said fabric base is imbedded in said coating.

5. A coated fabric comprising a fabric base having a singed nap, and a pyroxylin coating applied to the singed nap of said fabric of sufficient thickness to cover the upper surface of said singed nap, and extending substantially to the ground of the fabric.

6. The process of making coated fabrics comprising applying a suitable coating to the singed nap of the fabric.

7. The process of making coated fabrics

comprising applying a suitable coating to the singed nap of a fabric so as to imbed the singed nap in said coating.

8. The process of making coated fabrics comprising applying a coating containing a cellulose ester to the singed nap of a fabric so that the singed nap is imbedded in said coating.

9. The process of making coated fabrics comprising applying a pyroxylin coating to the singed nap of a fabric, so that said coating is carried by and anchored to said singed nap.

10. The process of making coated fabrics comprising raising a nap on a suitable fabric, singeing said nap, and applying a suitable coating to said singed nap.

In testimony whereof I affix my signature.

JOHN A. WILSON.