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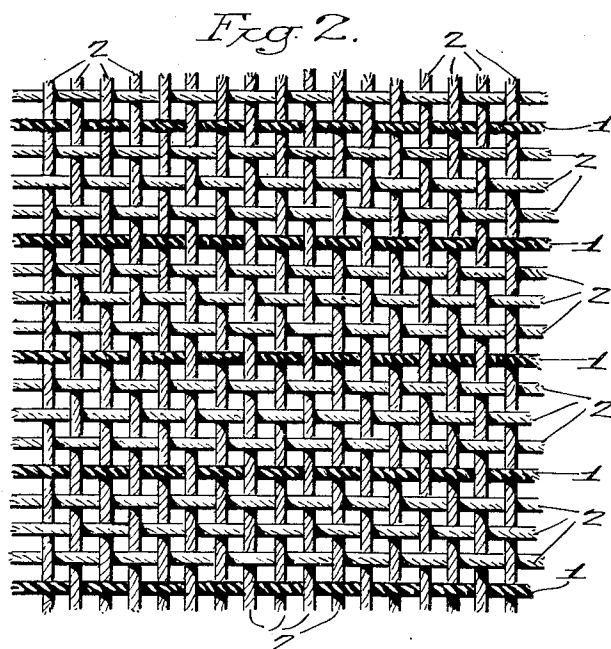
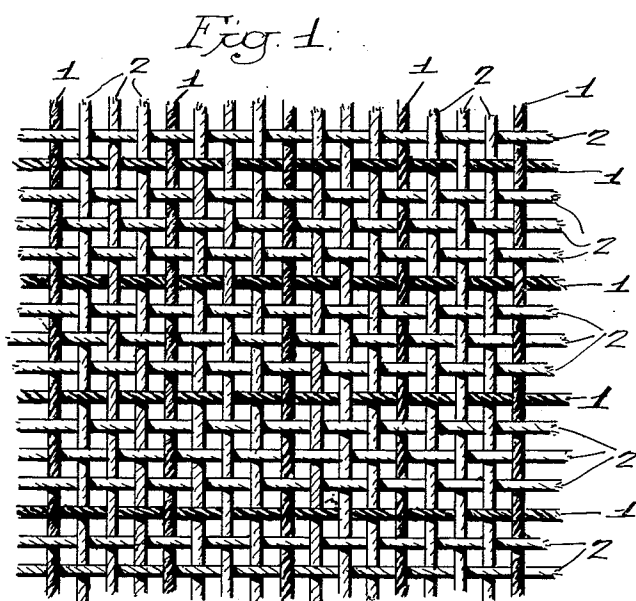
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2,266,631

WOVEN FABRIC AND METHOD OF MAKING SAME

Filed Aug. 2, 1937

2 Sheets-Sheet 1



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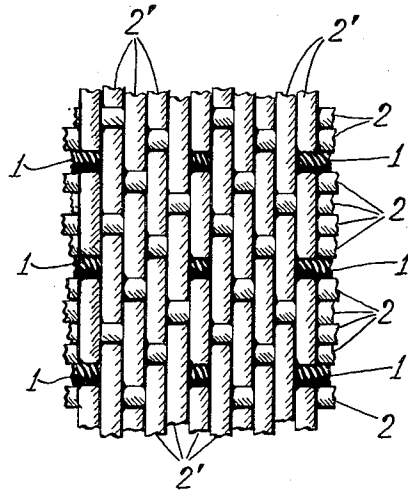
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Fig. 3.



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2,266,631

WOVEN FABRIC AND METHOD OF MAKING
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Application August 2, 1937, Serial No. 157,017

4 Claims. (Cl. 28—1)

This invention relates to an improved fabric and to a novel method of making the same.

One object of the invention is to reduce or eradicate what is known, by those familiar with the art of fabrication, as slippage, that is, the tendency of certain fabrics to become distorted as a result of the warp threads slipping on the filling threads, or vice versa, when the fabric is put under a strain particularly at the seams of garments made therefrom. While the fabric is described hereinafter with particular reference to the lining of men's and women's wear, the invention is applicable to any textile fabric in which it may be used to advantage.

Slippage is particularly prevalent in fabrics made of synthetic yarns of the filament type whether they be made of rayon or cellulose acetate, but the tendency exists likewise in spun rayon, silk, and mixed construction fabrics because of the inherent smooth surface of such fibres and yarns formed therefrom. Many efforts have been made to overcome the tendency through employment of various types of finishing materials such as coating compositions wherein the finishing material serves to make the warp yarns adhere to a certain extent to the filling threads, or vice versa. These finishes vary in their degree of efficacy and permanency and may all be classified as a finishing operation.

The present invention is distinguished from the prior practices in that it deals with the construction and fabrication of the fabric rather than with a finishing process. The invention contemplates the use of a thermoplastic fibre and particularly one manufactured from a synthetic resin. The synthetic resinous fibres employed are non-cementitious at room temperature, but become cementitious when heated at a temperature below that at which the fabric is damaged. A fibre that is particularly satisfactory is one which is manufactured from a copolymer of vinyl acetate and vinyl chloride. This fibre may be produced in long continual filaments resembling rayon and other synthetic cellulose fibres. However, its particular qualification for the purpose of the present invention is that it becomes cementitious at a temperature of approximately 200° F. This quality of the fibre of becoming cementitious below the temperature at which the fabric is damaged is essential to the proper practice of the invention. It is to be understood, however, that the softening temperature of the thermoplastic fibre may be varied to suit the requirements of the fabric in which it is to be employed, and that it is within the scope of the

invention to employ thermoplastic resinous fibres produced from various resinous materials having various softening temperatures.

The invention may be more clearly understood by reference to the accompanying drawings, in which

Fig. 1 is an enlarged face view of a fabric constructed according to the invention;

Fig. 2 is a similar view of a modification; and

Fig. 3 is a face view of a satin fabric constructed according to the invention.

In accordance with the invention, the thermoplastic resinous fibres are woven with other fibres to produce the desired fabric. From the drawings it is apparent that the thermoplastic fibres take the place of the regular textile threads, serve as textile threads and remain a permanent part of the fabric. As an example in a standard construction fabric, such as is used for the lining of men's suits, namely 140 x 68 all filament rayon, or in the same construction all filament acetate fabric, the procedure is to substitute for every tenth thread either in the warp or in the filling, or in both, one thread comprising the thermoplastic resinous fibre. The weaving of the fabric may then be carried out in the conventional manner. The fabric thus produced has embodied in it a mesh of thermoplastic threads. In the illustration of Fig. 1, thermoplastic threads 1 are embodied in both the warp and the filling, and are shown as being darker than the other threads 2. The number of thermoplastic threads shown has no significance, the only purpose of the illustration being to show the mesh of thermoplastic threads interwoven with the other threads. Nor has the particular weave any significance. It will be apparent that any desired number of thermoplastic threads may be used in the warp and/or filling, it being left to the discretion of the manufacturer as to how many threads of the thermoplastic fibre he may elect to use. Of course, the number of thermoplastic threads will vary in different fabrics.

The fabric thus constructed is finished in the normal manner. It is essential, however, that at some time during the finishing operation the fabric be exposed to heat sufficient to render the fibre cementitious and while at that temperature it should preferably be exposed to pressure such as may be encountered in light calendering. The thermoplastic threads or fibres when exposed to heat and light pressure will be caused to adhere to the other threads of fibres. In this manner sufficient adhesion will be effected at the various crossing points to overcome all tendency to slip.

It is characteristic of a warp face satin construction that the warp yarns slip on the filling threads. As it may be desirable in such a construction not to have the thermoplastic fibre appear on the face of the fabric and since there is comparatively little tendency for the filling threads to slip on the warp threads, it may be desirable to employ the thermoplastic threads only in the filling. It is advisable, however, to employ in the filling a sufficient number of picks of the thermoplastic fibre to assure that each warp thread will come in direct contact with successive thermoplastic filling threads at closely spaced points.

In Fig. 2, there is shown a fabric having the thermoplastic threads in the filling only, such threads again being designated 1 and the other threads being designated 2, and the filling threads being those extending across the sheet. The particular weave shown has no significance, the purpose of the illustration being to show the use of thermoplastic threads in the filling only as mentioned above. The weave might be that of a warp face satin fabric or any other fabric in which it may be desired to have the thermoplastic threads in the filling only.

In Fig. 3 there is illustrated a warp-face satin fabric in which the filling yarns 1 are thermoplastic threads, while the filling yarns 2 and the warp yarns 2' are smooth surfaced yarns, such as those made from silk or rayon. In this construction the warp yarns float on the surface and each warp yarn jumps four filling threads. Accordingly, to prevent the sidewise slipping of the warp yarns at least one in every five filling threads is a thermoplastic thread so that the warp yarns are bound to the thermoplastic threads at closely spaced points. Warp-face satin fabrics are well known and the construction shown in Fig. 3 is illustrated at page 89 of Denny's "Fabrics and How to Know Them," 3rd ed. rev. 1928. It is understood, however, that the invention is not limited to the particular construction of the satin fabric shown in Fig. 3.

While a specific type of synthetic resin has been mentioned above as the preferred form, other synthetic resins having the characteristic of becoming thermoplastic at a temperature below that at which the fabric is damaged, may be employed. Examples of other synthetic resinous fibres which may be used are polystyrene (vinyl benzene), vinyl acetate, polymers of acrylic acid, and acrylates, or mixtures or copolymers of two or more such resins, including the copolymer of vinyl acetate and vinyl chloride, urea-formaldehyde resins, glyptal resins, and the like.

It will be apparent that other modifications and embodiments of the invention are possible without departing from the spirit and scope of the invention.

I claim:

1. A method of making a satin fabric which

comprises weaving a fabric of satin construction with non-thermoplastic textile threads and thermoplastic resinous textile threads having an inherent tackiness upon heating, the thermoplastic threads being woven at regularly spaced positions in the fabric and forming crossings with said non-thermoplastic threads and heating the fabric to render the surface of the thermoplastic threads sufficiently tacky to cause said thermoplastic threads to become bonded to the non-thermoplastic threads at said crossings by the thermoplastic material resulting from the heating of the thermoplastic thread without complete destruction of said thermoplastic threads whereby slippage of the threads of said fabric is substantially prevented.

2. A method of making a warp-face satin fabric which comprises weaving a fabric of warp-face satin construction with non-thermoplastic textile threads in the warp and filling, and with thermoplastic resinous textile threads having an inherent tackiness upon heating in the filling, the thermoplastic threads being woven at regularly spaced positions in the filling of the fabric and forming crossings with said non-thermoplastic threads in the warp and subjecting the fabric to heat and pressure to render the surface of the thermoplastic threads sufficiently tacky to cause said thermoplastic threads to become bonded to the non-thermoplastic threads at said crossings by the thermoplastic material resulting from the heating of the thermoplastic thread without complete destruction of said thermoplastic threads whereby slippage of the threads of said fabric is substantially prevented.

3. A woven textile fabric of satin construction formed of non-thermoplastic textile threads and thermoplastic resinous textile threads having an inherent tackiness upon heating, the thermoplastic resinous threads being interwoven at regularly spaced positions in the fabric and forming crossings with said non-thermoplastic threads, the thermoplastic threads being bonded to the non-thermoplastic threads at said crossings by the thermoplastic material resulting from heating the thermoplastic threads, whereby slippage of the threads of said fabric is substantially prevented.

4. A woven textile fabric of warp-face satin construction formed of non-thermoplastic textile threads in the warp and filling and smooth-surfaced thermoplastic resinous textile threads having an inherent tackiness upon heating, the thermoplastic resinous threads being interwoven at regularly spaced positions in the filling of the fabric and forming crossings with said non-thermoplastic threads in the warp the thermoplastic threads being bonded to the non-thermoplastic threads at said crossings by the thermoplastic material resulting from heating of the thermoplastic threads, whereby slippage of the threads of said fabric is substantially prevented.

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