This invention relates to the production of effects on artificial materials and particularly to the production of fabrics containing cellulose acetate or like artificial filament-forming materials and exhibiting crêpe effects.

It is known to produce fabrics exhibiting crêpe effects by "scouring" a fabric containing a weft of high twist artificial silk yarn so as to cause said weft to cockle. The scouring treatment usually comprises a treatment with a hot aqueous solution, for example a soap solution, having a slight swelling effect on the highly twisted weft. When fabrics containing a weft of cellulose acetate artificial silk or like hydrophobe artificial filament-forming material are subjected to such a process, pronounced crêpe effects, for example, the so-called "pebble" effects, are not obtained unless the weft is twisted almost as highly as is practicable. The scouring process is relatively slow, usually occupying from one to two hours. Special care, moreover, is required in the prior processing of the fabric and of the yarn of which it is composed in order to obtain an effect which is uniform throughout the fabric.

It has now been found that considerable improvements can be effected by treating the fabric with formaldehyde before scouring. Such a treatment makes possible the use of less highly twisted weft than is otherwise required to produce pebble effects and reduces the duration of the scouring treatment very considerably.

Thus, for example, where to obtain by the known process a pebble effect on fabrics with yarn of a particular denier it was necessary for this yarn to be twisted to 85 turns per inch the treatment of the present invention enables equally good effects to be obtained when the twist is as low as 50 turns per inch. Such a decrease in the amount of twist necessary is of great importance; the yarn of lower twist is far more stable than the higher twist yarns otherwise necessary; the processing of the yarn can be carried out with less danger of breakage and stronger fabrics are obtainable. The duration of the scouring treatment may be reduced from an hour or more to a few minutes. In addition to the foregoing advantages, the process of the invention gives highly uniform effects even where, in the prior processing of the fabric, or of the yarns of which it is composed, there have been accidental departures from uniformity which would be expected to show themselves in the finished fabric.

The formaldehyde is preferably applied in dilute aqueous solution, for example, in a solution containing 0.5–1 or 2% by weight of formaldehyde. A convenient method of applying the formaldehyde to the fabric is by padding. After the application of the formaldehyde the fabric may be dried slowly under substantially no applied tension (e.g. on a pin stenter) and scoured for a few minutes or longer, according to the twist in the weft, with a 1 or 2–3% soap solution at 90–100° C.

The fabric treated may be sized with an albuminous substance, for example, gelatin or casein before treatment with the formaldehyde or before scouring and while the fabric still contains formaldehyde. Or such a size may be contained in the warp threads only. Valuable effects, however, have been obtained in the substantial absence of size. Thus, for example, fabrics which after scouring exhibit slight crêpe effects, can be given a much more pronounced effect by treatment with formaldehyde followed by rescouring.

Scouring a fabric containing a weft of high twist cellulose acetate artificial silk to produce crêpe effects usually involves shrinkage of the fabric both warwise and weftwise. By the process of the present invention, crêpe effects can be obtained with very little shrinkage of the fabric in the warwise direction, substantially the whole of the shrinkage being weftwise. It appears possible that the action of the formaldehyde involves a temporary stiffening of the warp threads so that these do not yield so readily to the distorting stresses exerted by the weft threads in cockling. I have found that formaldehyde has a stiffening action on cellulose acetate even in the absence of gelatine, casein or other component capable of being hardened by the formaldehyde. The present invention envisages broadly the step of hardening or stiffening the warp threads in a fabric containing high twist weft before scouring to produce crêpe effects. Other active aldehydes can be used, e.g. acetaldehyde, benzaldehyde, furfural and glyceral.

The following examples illustrate the invention:

Example 1

A fabric having a warp of cellulose acetate sized with gelatine and a weft of cellulose acetate of 100 denier 26 filaments twisted in steam to 80 turns per inch is padded through a 1% aqueous solution of formaldehyde and dried slack on a pin stenter.

The fabric is then subjected to a crêpe-scour for about 2 minutes in an aqueous bath contain-
ing 2 grams per litre of soap at a temperature just below the boiling point.

Example 2

The process is carried out as in Example 1, 5 save that the crêpe-scouring operation is effected by steeping the fabric for about 1 hour in the hot soap solution.

Example 3

The process is carried out as in Example 1 or 2, save that the warp is unsized.

Instead of formaldehyde, other hardening agents can be employed, for example, dioxal.

The invention has been described with particular reference to the treatment of fabrics containing a high twist weft of cellulose acetate artificial silk. The invention includes, however, the treatment of similar fabrics containing instead of cellulose acetate, other hydrophobe film-forming bases especially other organic esters of cellulose, for example, cellulose propionate and butyrate, cellulose acetate propionate and cellulose acetate propionate butyrate, mixed organic inorganic esters, for example, cellulose nitrate acetate and cellulose nitrate propionate, cellulose ethers, for example, ethyl cellulose and benzyl cellulose, ether esters of cellulose, for example, ethyl cellulose acetate and oxethyl cellulose acetate, polymerised vinyl acetate and other polymerised vinyl esters and ethers and the similar artificial filament-forming substances derived from other unsaturated compounds, for example, of the acrylic and methacrylic series. Preferably, the twist or at least the major portion thereof is inserted in the weft yarn under the influence of steam or hot water.

Having described my invention, what I desire to secure by Letters Patent is:

1. Process for the production of crêpe fabrics, which comprises treating a fabric, both the warp and weft of which are composed of the same hydrophobe film-forming polymer, the warp yarns having a low twist and the weft yarns having a high twist but below the twist normally given to the yarns employed in the production of said crêpe fabrics, with aqueous formaldehyde of a concentration between 0.5 and 2% so as to cause said warp yarns to stiffen, and subjecting the so-treated fabric to a crêpe-scouring bath.

2. Process for the production of crêpe fabrics, which comprises treating a fabric, both the warp and weft of which are composed of the same lower fatty acid ester of cellulose, the warp yarns having a low twist and the weft yarns having a high twist but below the twist normally given to the yarns employed in the production of said crêpe fabrics, with aqueous formaldehyde of a concentration between 0.5 and 2% so as to cause said warp yarns to stiffen, and subjecting the so-treated fabric to a crêpe-scouring bath.

3. Process for the production of crêpe fabrics, which comprises treating a fabric, both the warp and weft of which are composed of cellulose acetate, the warp yarns having a low twist and the weft yarns having a high twist but below the twist normally given to the yarns employed in the production of said crêpe fabrics, with aqueous formaldehyde of a concentration between 0.5 and 2% so as to cause said warp yarns to stiffen, and subjecting the so-treated fabric to a crêpe-scouring bath.

4. Process for the production of crêpe fabrics, which comprises treating a fabric, both the warp and weft of which are composed of the same lower fatty acid ester of cellulose, the warp yarns having a low twist and the weft yarns having a denier of 100 and a twist of 80 turns per inch, with aqueous formaldehyde of a concentration between 0.5 and 2% so as to cause said warp yarns to stiffen, and subjecting the so-treated fabric to a crêpe-scouring bath.

5. Process for the production of crêpe fabrics, which comprises treating a fabric, both the warp and weft of which are composed of cellulose acetate, the warp yarns having a low twist and the weft yarns having a denier of 100 and a twist of 80 turns per inch, with aqueous formaldehyde of a concentration between 0.5 and 2% so as to cause said warp yarns to stiffen, and subjecting the so-treated fabric to a crêpe-scouring bath.

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