

Patented May 1, 1928.

1,667,892

UNITED STATES PATENT OFFICE.

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FIGURED FABRIC AND METHOD OF PRODUCING SAME.

No Drawing. Application filed July 27, 1925, Serial No. 46,489, and in Germany July 29, 1924.

The invention relates to figured fabrics and method of producing same, and more particularly it relates to such fabrics which give the appearance of having been produced by a weaving operation, i. e. a fabric in which the figure or pattern is defined by contrast of relatively thick and relatively thin portions such as is produced by Jacquard loom weaving.

In United States Letters Patent No. 1,425,520, to Henry Giesler, granted August 15, 1922, there is described the production of fancy or figured fabrics having relatively dense portions and relatively thin or light ground portions to produce a woven figured effect, obtained by chemically treating and carbonizing certain of the fibres in certain portions of the fabric so as to produce said figured effect.

It has been found that these woven figured effects can be attained in another way and without the employment of carbonization.

One of the objects of the invention is the production of a woven figured effect in fabrics without the employment of carbonization.

Another object is the production of variegated colored effects in such fabrics.

The invention consists in the novel fabric hereinafter described by way of example according to the preferred embodiment thereof, and in the method and steps in the method of producing same.

In the present embodiment of the invention advantage is taken of the fact that acetate silk is readily soluble in various solvents which will not dissolve several other kinds of fibres including cellulose fibres other than acetate silk, and this is made use of in dissolving the acetate silk fibres from different portions of the fabric to produce a woven figured or pattern effect. According to the invention, therefore, it is possible to produce the desired woven pattern effects by removing from the fabric cellulose fibres of one kind without removing cellulose fibres of another kind and without the requirement of pretreatment of one set of the cellulose fibres for the purpose.

The present invention will be more particularly described by way of example in connection with fabrics woven of two or more different fibres of which acetate silk is one and the one to be dissolved out from portions of the fabric.

Acetate silk is easily soluble in various solvents such as chloroform, acetone, pyridin, epichlorhydrin, etc. In accordance with this example of the invention there is first selected or produced a fabric in which the cotton threads forming the ground have associated with them, in the warp or in the woof or also in both directions, threads of acetate silk. In this connection the silk threads may, for example, alternate singly or in pairs with the cotton threads or be twisted into yarn with the cotton threads with more or less twisting.

Portions of this fabric are provided with a reserve such for example as by printing the reserve thereon to produce a figured effect, whereupon the fabric is steamed if necessary, and is then passed through an apparatus that is charged with the solvent in which apparatus the dissolving away of the acetate silk that has not been reserved is performed. As reserves there may be employed such agents as merely exercise a mechanically protective effect or else are so constituted that the acetate silk fibre situated beneath them is chemically changed. In the former case a resist that prevents the access of the solvent is applied to the fabric, for which purpose glue solution, alcoholic shellac solution, and solutions of other substances that are insoluble in the solvents for acetate silk are suitable. After completion of the dissolving process and the removal of the resist, unaltered acetate silk remains as a figure-forming component of the fabric.

But if a reserve of an alkaline type, for example thickened solutions of soda, potash, caustic soda, caustic potash, is caused to act on the acetate silk, there results a saponification and in consequence thereof a conversion of the cellulose ester into cellulose or cellulose hydrate, which are insoluble. In this connection the thickening, as mechanical protective agent, and the alkali, as chemical agent, assist one another in the action. The alkaline reserve may, however, also be washed out after the saponification which has been effected, for example, by means of steaming, whereupon the fabric is subjected to the solvent, which latter dissolves only the unaltered acetate silk, but does not, on the other hand, remove the saponified fibre.

The solvents for silk that are employed may be entirely or partially recovered in a simple manner, in which connection in the

latter case the cellulose acetate, while still dissolved, may be employed for the production of artificial silk, as a varnish, or for other purposes.

5 By means of the methods of operation that have been mentioned figured fabric effects are obtained, in which connection the non-reserve or non-saponified portion, in consequence of the removal of the threads of acetate silk, forms the light ground. These
10 thin or lighter ground portions are in contrast to the reserved portions which form the dense figured portions in consequence of the greater content of fibre. Hitherto similar effects could be produced only with trouble and expense on Jacquard looms.

The novel fabric effects obtained by means of the processes that have been described may be further enriched in manifold ways
20 by means of dyeing and printing effects. If the fabric is dyed after the removal of the acetate silk that has not been reserved, there are produced unicolored or white figured effects on a cotton ground of
25 the same color, according as the reserve acted chemically or mechanically. If in this connection there is printed on the denser portions, not an alkali reserve, but an alkaline printing dye, for example one or
30 more indanthren printing dyes, there are obtained colored dense figure effects on a white loose cotton ground, in which connection the latter may be further overdyed.

Other color effects are produced if the fabric
35 is first dyed in the piece, so that the cotton remains colored and the acetate silk white, and if one applies a reserve on this and dissolves the silk that has not been reserved, in consequence whereof a figure effect consisting of white silk and colored
40 cotton is formed upon a colored silk-free cotton ground. Vice versa, colored silk figure effects on a white cotton ground may be produced, instead of by means of dye printing as mentioned above, by means of previous dyeing of the silk, reserving, and dissolving of the silk. Finally, in consequence of the differing dyeing properties of cotton and acetate silk, the fabric may be predyed
50 in two colors, reserved, and the silk dissolved, by which means rich color effects allow the figuring of the fabric to appear still more prominently. For the purpose of increasing the lustre the fabric may also be
55 mercerized or mercerized cotton yarn may be used in addition.

The preferred embodiment of the invention is not limited to fabric of cotton and acetate silk, but the multiplicity of the effects may still be materially increased by
60 weaving the two aforesaid textiles together with animal fibre, wool and genuine silk, and also other kinds of artificial silk, such as viscose silk, copper silk, and nitro silk.
65 There may be employed for this process, in

general, fabrics and fibrous structures of any kind whatever, if they are given as a component, on the one hand, acetate silk or a substance that is equivalent as regards the properties that are involved, and, on the other hand, one or more varieties of vegetable, animal, or other artificial fibres.

It will be understood by those skilled in the art, after understanding the invention, that various changes and modifications may be made in the carrying out of the process from that above described, according to the composition of the fabric and the effects desired, and the invention, therefore, is not intended to be limited to the method set forth, but it is aimed in the appended claims to cover all such changes and modifications as come within the spirit or scope of the invention.

What I claim as new and desire to secure by Letters Patent, is:

1. A fabric containing acetate silk and one or more different kinds or fibres and having relatively thick and relatively thin portions giving by contrast a woven figured effect produced by dissolving the acetate silk from portions of the fabric.

2. A multi-colored fabric containing acetate silk and one or more different kinds of fibres and having relatively thick and relatively thin portions giving by contrast a woven figured effect produced by dissolving the acetate silk from portions of the fabric, and colored with at least one dye that has a different coloring effect on the acetate silk fibres from its effect on the other fibres of the fabric.

3. A colored fabric containing acetate silk and one or more different kinds of fibres and having relatively thick and relatively thin portions giving by contrast a woven figured effect produced by dissolving the acetate silk from portions of the fabric, and having a color printed on the relatively thick portions of the fabric only.

4. Method of producing woven figured effects in fabrics containing acetate silk and other fibres, which comprises treating certain portions of the fabric to protect the acetate silk thereof from being dissolved in a subsequent operation and then treating the fabric with a solvent of acetate silk to dissolve the acetate silk from the unprotected portions so as to produce said woven figured effect.

5. A multi-colored fabric containing acetate silk and one or more different kinds of fibres and having relatively thick and relatively thin portions giving by contrast a woven figured effect produced by dissolving the acetate silk from portions of the fabric and colored with at least one dye that does not produce the same coloring effect on the acetate silk fibres of the fabric as it produces on some other fibres of the fabric.

6. A colored fabric containing acetate silk and one or more different kinds of fibres and having relatively thick and relatively thin portions giving by contrast a woven
5 figured effect produced by dissolving the acetate silk from portions of the fabric, and having a color printed on one of said portions which is not printed on the other of said portions.
- 10 7. Method of producing woven figured effects in fabrics, which comprises weaving acetate silk fibres and other fibres into a fabric and dissolving the acetate silk from portions of the fabric to produce said woven
15 figured effect.
8. Method of producing woven figured effects in fabrics containing acetate silk and other fibres, which comprises printing a reserve on portions of the fabric having the acetate silk and then treating the fabric with
20 a solvent of acetate silk to dissolve the acetate silk from the unprotected portions so as to produce said woven figured effect.
9. Method of producing fabrics with pattern effects which consists in producing a
25 fabric having relatively insoluble cellulose threads and relatively soluble cellulose threads therein, and dissolving portions of the more soluble cellulose threads according to a predetermined design.
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- In testimony whereof I have signed my name to this specification.

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