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DISCHARGE PRINTING

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This invention relates to method of producing differential color effects on fabrics, and particularly fabrics containing organic esters of cellulose, by discharge printing with a saponifying agent.

An object of my invention is to produce discharge prints on fabrics containing organic esters of cellulose, and particularly those fabrics which have been colored with dyestuffs that cannot be discharged by the ordinary methods now employed.

A further object of my invention is to discharge dyed fabrics containing organic ester of cellulose yarn by at least partially saponifying the organic ester of cellulose so that it loses its affinity for the dyestuff present. Other objects of this invention will appear from the following detailed description.

The production of designs on colored backgrounds on fabrics containing organic esters of cellulose, particularly cellulose acetate, has heretofore offered serious difficulties, since many of the dyes that color such fabrics cannot be discharged by the ordinary discharge methods. I have found that many of such dyestuffs may be discharged by the employment of an alkaline material so as to at least partially saponify the cellulose ester to convert the same into reconstituted cellulose which has no affinity for such dyestuffs.

In accordance with my invention, I discharge print fabrics containing yarns of organic esters of cellulose which have been dyed with a dyestuff that has little or no affinity for cellulose, by locally applying thereto a composition containing a saponifying agent for the cellulose ester. After application of the saponifying agent and fixing the same, the fabric is washed, and the dyestuff which has no affinity for the reconstituted cellulose is thus removed from the saponified portions.

The fabric to be treated contains yarns of organic esters of cellulose, such as cellulose acetate, cellulose formate, cellulose propionate and cellulose butyrate. The fabric to be treated may consist wholly of yarns containing one or more organic esters of cellulose, or it may be a mixed fabric containing such yarns and yarns of other fibres.

The fabric to be treated with the saponifying discharge agent is previously dyed or colored with any suitable dyestuff which has affinity for the organic ester of cellulose material but little or no affinity for reconstituted cellulose. The dyestuffs employed for dyeing cellulose acetate fabric are preferably insoluble or difficultly soluble coloring matter which are applied dispersed or solubilized by a dispersing agent such as a sulpho fatty acid, particularly sulphoricinoleic acid (Turkey red oil). As instances of suitable bodies may be mentioned the coloring matters or organic compounds or classes of coloring matters or compounds referred to in United States Patents Nos. 1,618,413, 1,545,819, 1,600,277, 1,641,965, 1,618,415, 1,694,414, 1,679,935, and British Patents Nos. 239,470, 263,260 and 283,081, the coloring matters of the British Patents 299,349 and 300,920 or their corresponding United States patent application S. No. 287,646, filed June 22, 1928 containing one or more ketoacidyl groups and particularly acetoacetyl groups, the nitro-diarylamines specified in British Patent 305,560 or its corresponding United States patent applications Nos. 311,252 and 311,253 both of October 8, 1928, the unsulphonated thiazole derivatives of United States Patent 1,871,673 granted August 16, 1932, the azo dyes containing the xanthene or thioxanthene nucleus of British Patent 311,433 or its corresponding United States patent application No. 323,211 filed December 1, 1928, and the azo dyes of British Patent 310,827 or its corresponding United States patent application No. 297,098 filed August 2, 1928, containing the anthraquinone nucleus.

The dyed fabric has locally applied thereto a discharging agent which comprises an alkali or alkaline salt that saponifies at least partially the cellulose ester. Examples of such alkaline materials are sodium hydroxide, potassium hydroxide, sodium carbonate, etc. The alkaline agent is present in rather concentrated form, in case of sodium hydroxide the amount being 10 to 30% by weight. The saponifying agent is generally applied in the form of a paste containing thickening agents such as gum tragacanth, British gum or other dextrines, water-soluble cellulose ethers, agar agar, starches and the like.

If colored or illuminated discharges are desired, the discharge agent may contain a dyestuff that has an affinity for cellulose and which is not affected deleteriously by the alkaline material present. Examples of such dyestuffs are the vat dyestuffs, but when these vat dyestuffs are employed in the presence of hydrosulfite or other reducing agent, the amount of the latter is preferably kept at a minimum.

In order to obtain better penetration and quicker action of the alkaline material, the discharge agent may contain a swelling agent for

the cellulose acetate or other organic ester of cellulose, examples of which are pyridine, the thiocyanates of sodium, potassium or ammonium, ethyl alcohol, methyl alcohol, diethylene glycol, etc.

The discharge agent may be applied in any suitable manner such as by means of embossed or engraved rollers or plates, or by brushing or spraying through stencils. After the local application of the discharge agent, the fabric may be steamed, and then washed with water which may be slightly acid, dried and given any other finishing treatment.

In order further to illustrate my invention but without being limited thereto, the following specific examples are given.

Example I

A fabric consisting wholly of cellulose acetate yarn and dyed blue by means of 1:4 dimethyl diamino anthraquinone has locally applied thereto by means of engraved rollers a paste of the following composition:

	Parts by weight
Sodium hydroxide	25
Water	20
Gum arabic thickener (1:1)	55

The fabric is dried and then steamed for 15 minutes with steam at atmospheric pressure. The fabric is then rinsed and dried. Discharge prints having white designs against a blue background are thus produced.

Example II

A fabric consisting wholly of cellulose acetate yarn and dyed blue by means of 1:4 dimethyl diamino anthraquinone has locally applied thereto by means of engraved roller a paste of the following composition:

	Parts by weight
Sodium hydroxide	25
Sodium hydrosulfite	2
Sodium formaldehyde sulphoxylate	2
Ciba Pink B (Color Index No. 1207)	5
Water	11
Gum arabic thickener (1:1)	55

The fabric is dried and then steamed for 15 minutes with steam at ordinary pressure. The fabric is then oxidized in a bath containing one gram per litre of soap and three grams per litre of sodium perborate at 50° C. for 10 minutes, then rinsed and dried. A fabric having pink designs against a blue background is produced.

It is to be understood that the foregoing detailed description is given merely by way of illustration and that many variations may be made therein without departing from the spirit of my invention.

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

1. Method of at least partially discharging the color from material comprising organic esters of cellulose which has been dyed with dyestuff having little or no affinity for cellulose comprising at least partially saponifying the organic ester of cellulose.

2. Method of at least partially discharging the color from material comprising cellulose acetate which has been dyed with dyestuff having little or no affinity for cellulose comprising at least partially saponifying the cellulose acetate.

3. Method of producing differential color effects on textile material comprising locally applying a saponifying agent to a fabric containing yarn of organic esters of cellulose which has been dyed with a dyestuff having little or no affinity for cellulose.

4. Method of producing differential color effects on textile material comprising locally applying a saponifying agent to a fabric containing yarn of cellulose acetate which has been dyed with a dyestuff having little or no affinity for cellulose.

5. Method of producing differential color effects on fabrics comprising locally applying a paste containing alkaline material corresponding to 10 to 30% of sodium hydroxide to a fabric containing yarn of organic esters of cellulose which has been dyed with a dyestuff having little or no affinity for celluolse.

6. Method of producing differential color effects on fabrics comprising locally applying a paste containing alkaline material corresponding to 10 to 30% of sodium hydroxide to a fabric containing yarn of cellulose acetate which has been dyed with a dyestuff having little or no affinity for cellulose.

7. Method of producing differential color effects on textile material comprising locally applying to a fabric containing cellulose acetate yarn which has been dyed with a dyestuff having little or no affinity for cellulose a paste containing alkaline material and a swelling agent for the cellulose acetate.

8. Method of producing differential color effects on textile material comprising locally applying to a fabric containing cellulose acetate yarn which has been dyed with a dyestuff having little or no affinity for cellulose a paste containing alkaline material and a dyestuff having an affinity for cellulose.

9. Method of producing differential color effects on textile material comprising locally applying a saponifying agent to a fabric containing cellulose acetate yarn which has been dyed with 1:4 dimethyl diamino anthraquinone.

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