

UNITED STATES PATENT OFFICE

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DECORATIVE TREATMENT OF TEXTILE FABRICS

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This invention relates to the decorative treatment of textile fabrics, and more particularly to the production of two-sided or reversible prints in which, whilst the patterns or portions of the patterns at the two sides are the same and in perfect register, they are in contrasting colours.

The invention comprises the separate treatment of the opposite sides of the fabric followed by or subsequent to a treatment of one side thereof with a material or materials which penetrates or penetrate through the fabric and reacts or react differently with the materials used in the separate treatments, so as to produce the same pattern but different colour shades or contrasting colours at the opposite sides of the fabric.

The invention further comprises the incorporation with the materials used in the treatment of the fabric of suitable discharges or resists for the purpose of varying the colour effects.

In one convenient application of my invention, one side of the fabric is prepared by means of an engraved padding or printing roller with a suitably thickened solution of an azo-dyestuff component capable of forming insoluble azo colours by interaction with a diazo solution, such as beta-naphthol, the body commercially known as Naphthol A. S. (Col. Ind. p. 333), and the like, and then after drying, the other side of the fabric is similarly prepared with a different component, such as for example, the body commercially known as Naphthol A. S. G. (Col. Ind. p. 359), and dried. Thereafter, the fabric is printed at one side only by means of a copper printing roller having engraving of exceptional depth, such as is usual for "bang-through" work, with a diazo-compound capable of producing an insoluble azo colour of one shade with the component on one side, and of another contrasting shade with the component on the other side of the fabric.

One example of this method is as follows:— Pad one face of the cloth with Beta Naphthol R. (Col. Ind. p. 359). Pad the other face of the cloth with Naphthol A. S. Print, using "bang-through" engraving, one side of the fabric with a two-colour pattern, using in

one printing roller Chromacetine Blue S. (Colour Index 884) and in the other roller Fast Red R. L. base (Col. Ind. Suppl. p. 41). The fabric shows orange and blue at one side and red and blue at the other side.

If desired, a plurality of diazo compounds may be printed in fit on the one side of the fabric for producing a variation in the colour effects at each side of the fabric. The diazo compound printed by the deeply engraved roller or rollers may be printed along with, for example, chrome colours to produce multi-coloured effects. A typical printing combination is diazotized para-nitro-ortho-anisidine in one roller with Chromacetine Blue S. (Colour Index 884) printed in fit in a second roller. Or diazotized para-nitro-ortho-anisidine in one roller, diazotized paranitraniline in a second roller and Chromacetine Blue S. (Colour Index 884) in a third roller, the patterns on the three rollers being in fit. The character of the cloth and the thickness of the pad or cover with which the two sides of the fabric are separately prepared should be such that a minimum of the prepare on one side of the fabric penetrates to the other side. A fixed organic acid such as, for example, citric acid, may be added to the diazo compound to moderate the speed of coupling with the component on the face of the cloth, upon which the diazo compound is printed, and thus ensure a sufficiency of such compound to couple with the other component on the back of the cloth.

In another application of my invention, I print the colour or colours of the design (which is to appear with contrasting shades on the opposite sides of the cloth) with one or more components which penetrate to the opposite sides of the fabric, and subsequently pad or cover the so printed goods on one side of the cloth with one diazo solution and on the other side of the cloth with a different diazo solution.

I may modify or vary the effects produced by incorporating with the diazo printing colours suitable materials to produce resist or discharge effects, or the resists or discharges may be printed by a separate roller or rollers, either fitting with or falling on

the patterns produced by the engraved rollers which print the diazo colours. As an example, acetate of soda might be printed along with the diazo colour for the purpose of resisting, for example, an "indigosol (Disulphuric ether of a leuco-vat dye)" afterwards applied to the fabric; or as another example, bichromate of soda may be incorporated with the diazo colour to discharge indigo dye which has already been applied to the fabric, the discharging being completed by passing the goods through an appropriate bath of sulphuric acid and oxalic acid in the well known manner.

If desired, I may apply the azo dyestuff components to the opposite sides of the fabric by spraying instead of by padding or printing. Or one side may be sprayed and the other padded or printed.

Further examples of the application of my invention are as follows:—

(1) Print or pad one face of a cotton cloth with Naphthol A. S. Print or pad the other face of the cloth with Naphthol A. S. G. Print one side of the cloth, using "bang-through" engraving, with a three colour pattern using (1) tetrazotised dianisidine, (2) diazo-para-nitro-ortho-anisidine and (3) diazo meta-nitraniline.

(2) Print one side of a cotton fabric (using "bang-through" engraving) as a two colour fitting pattern with (1) Naphthol A. S. and (2) Naphthol A. S. G. Print one face of the fabric with diazotized para-nitro-ortho-anisidine and the other face with diazotized alpha naphthylamine.

(3) Pad one face of a cotton fabric with Naphthol A. S. and the other face with a mixture of three parts Naphthol A. S. G. and one part Naphthol A. S. R. L. (Col. Ind. Suppl. p. 46). Print (using "bang-through" engraving), one side of the fabric with diazotized alpha naphthylamine as a one colour stripe, and develop in diazotized para-nitro-ortho-toluidine. The fabric will be scarlet and claret on one side and orange and brown on the other.

What I claim is:—

1. A process for the decorative treatment of a textile fabric which comprises preparing one side of a textile fabric with a suitably thickened solution of an azo dyestuff component capable of forming insoluble azo colours, by interaction with a diazo solution, drying the fabric, preparing the other side of the fabric with a different component, drying the fabric, and printing the fabric at one side only with a printing roller having engraving of exceptional depth, with a diazo compound capable of producing an insoluble azo colour of one shade with the component on one side and of another contrasting shade with the component on the other side of the fabric.

2. In the process of claim 1, printing a plurality of diazo compounds on the one side

of the fabric for producing a variation in the colour effects at each side of the fabric.

3. In the process of claim 1, printing the fabric at one side by a printing roller or rollers having engraving of exceptional depth with an azo dyestuff component or components before preparing the two sides with separate diazo compounds.

4. A process for the decorative treatment of fabric, which comprises, applying an azo dyestuff component to one side of the fabric, applying a different azo dyestuff component to the other side thereof, and applying to the fabric so that it penetrates to both sides thereof a diazo compound which reacts differently with the said components to produce the same pattern at the opposite sides of the fabric in contrasting colours.

5. A process for the decorative treatment of fabrics which comprises producing a pattern in a thickened solution of an azo dyestuff component at one side of the fabric, producing a pattern in a thickened solution of another azo dyestuff component at the other side of the fabric and printing one side only of the fabric with a diazo compound which penetrates to both sides of the fabric and forms insoluble azo colours of contrasting shades with the azo dyestuff components at the opposite sides of the fabric.

6. A process for the decorative treatment of fabrics which comprises printing one side of the fabric with at least one azo dyestuff component which penetrates to the opposite sides of the fabric, treating one side of the fabric with at least one diazo compound and treating the other side of the fabric with a different diazo compound or compounds.

7. In the process of claim 5 incorporating materials to produce resist or discharge effects in the diazo compound.

In testimony whereof I have signed my name to this specification.

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