

UNITED STATES PATENT OFFICE

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TRANSFER

No Drawing.

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My invention relates to a hot iron transfer process whereby fabrics can be decorated or marked by transferring resists, discharges and certain dyestuffs, in various combinations to dyed or undyed fabrics or textile materials.

For many years printing resists on fabrics in various markings or designs has been practiced in manufacturing establishments, so that when the fabric is entirely dipped or covered with a dye color the resist protects the portions so marked. By the method I shall describe, designs and markings on paper can be distributed for home use or for use outside of the place where they are made. These paper designs, etc., can be used in conjunction with the popular home package dyes, or can be used by a manufacturer desiring to mark comparatively small lots of textile materials at one time, or at least in the absence of a regular textile printing machine.

My invention relates to a process whereby resists, either white or colorless, or of a multicolor design can be placed on a paper base and afterwards be transferred to fabrics by a hot iron without the aid of moisture. The process relates to the transferring of characters, markings or designs.

One object of my invention is to enable anyone not familiar with the printing of textiles to obtain beautiful and useful resist effects by simply applying a white or colorless resist "hot iron transfer" to the dry fabric before it is subjected to a dye bath.

Another object of this invention is to enable anyone, familiar or not with the printing of textiles, to obtain beautiful and useful resist effects in one or more colors by simply applying a hot iron transfer to the dry fabric before it is subjected to a dye bath.

Another object of this invention is to print a transfer medium on a paper base in one or more colors that when transferred to a dry fabric will resist or remain fast if later subjected to hot water and washing processes whether subjected to a dye bath or not.

Another object of this invention is to make a hot iron transfer for applying a chemical

resist or resists to dry fabrics to be subjected later to a dye bath.

Another object of this invention is to make a hot iron transfer for applying a chemical discharge to dry fabrics, previously dyed with direct or substantive dyes, and later applying heat and moisture to bring about the chemical discoloration of the fabric.

Another object of this invention is to make a hot iron transfer for applying a mechanical resist or resists to dry fabrics.

Another object of this invention relates to a transfer medium to be first printed on a paper base and which is then capable of being transferred to dry fabric and then softened or washed out when the fabric is treated with moisture or heat or both and the moisture and heat act upon the chemical or chemicals and same are fastened on in the fibres.

Another object of this invention is to make a hot iron transfer for applying a chemical discharge and one or more colors placed in different positions on the transfer to dry fabrics, previously dyed with direct or substantive dyes and later applying heat and moisture to bring about the chemical discolorization of the fabric, and to substitute the dyes applied and to effect their fixation upon the fabric.

In the preparation of the material for these transfer media, I use some form of unctuous or waxlike substance, such as true wax, paraffin, stearic acid, etc. I call this material wax. It must be solid at ordinary temperatures, but melt by the application of heat. I prefer to use stearic acid.

The wax is melted, and the materials to be added in as fine a state of subdivision as possible, are intimately mixed, and I find this is conveniently accomplished by first stirring them together in a heated mixer, and then passing the mixture through a heated paint mill to thoroughly separate the particles that are suspended in the wax.

(A) In cases where I wish to make resist or discharge transfers without an admixture of dye color, I incorporate in the melted wax finely powdered sodium bisulphite, zinc dust, and preferably some anthraquinone. This

mixture has a greyish color, so that it is visible upon white paper, used as a base. The amount of zinc taken is preferably considerably in excess of its chemical equivalence as it will not be entirely consumed in the reaction, and the action is facilitated by having an excess present.

The use of separately prepared hydrosulphite compounds such as the sodium salt produces practically the same result as that here described, and the use of formaldehyde hydrosulphite compounds in place of the simple substances would be within the scope of this invention.

Para formaldehyde is a powder and is converted into formaldehyde by heat, thus it is effective when combined with a powdered zinc dust and sodium bisulphite which are affected by heat and moisture which in applicant's case is applied after the transfer has been made to the fabric.

When this composition is printed as a design, etc. upon a colorless textile, it forms a resist so that the cloth may be dyed in an ordinary dye bath, such as one containing a direct or substantive color, and the printed portions will remain uncolored. If this resist is printed upon certain dyed fabrics, and they are then dipped or worked in hot or boiling water, the dyes will be discharged where the cloth has been printed with the discharge material. The use of a little of an alkali or alkaline salt such as sodium carbonate in the water is sometimes desirable.

(B) hydrosulphites, which are the product of the reaction of zinc upon bisulphites reduce so called vat dyes to their leuco bodies. Therefore, if vat dyes are intimately mixed or ground into the composition (A) different results may be obtained. Transfer sheets printed with such mixture may be used upon certain dyed materials with the result that the dye is discharged where printed when the material is treated with hot water, and the vat colors are developed in its place. One or more vat colors can be used, separately placed upon the same transfer sheet, but in all cases mixed with the base composition (A).

What I desire to claim is:—

1. A transfer sheet comprising a paper base and a design thereon, composed of a moderately fusible menstrum, practically insoluble in water, having incorporated therein a finely divided salt of hydrosulphurous acid.

2. A transfer sheet comprising a paper base and a design thereon, composed of a moderately fusible menstrum, practically insoluble in water, having incorporated therein a mixture of zinc dust and powdered sodium bisulphite containing zinc in excess of chemical equivalence.

3. A transfer sheet comprising a paper base and a design thereon, composed of stearic acid, having incorporated therein a mix-

ture of zinc dust and powdered sodium bisulphite containing zinc in excess of chemical equivalence and a small quantity of powdered paraformaldehyde.

4. A transfer sheet comprising a paper base and a design thereon, composed of wax, having incorporated therein a mixture of zinc dust and powdered sodium bisulphite containing zinc for chemical equivalence and a small quantity of powdered paraformaldehyde and a finely powdered vat dyestuff.

5. A transfer sheet comprising a base and a transferable medium thereon in the form of a design, said medium containing substances adapted to render dye-resisting and dye-discharging those parts of a fabric to which the design is transferred.

6. A transfer sheet comprising a base and a transferable medium thereon in the form of a design, said medium containing substances adapted to render dye-resisting and dye-discharging those parts of a fabric to which the design is transferred, the dye-resisting portion of the medium being a thermo-plastic, water-repellant substance.

7. A transfer sheet comprising a base, and a transferable medium thereon in the form of a design, said medium including a substance to render dye discharging those parts of a fabric to which the design is transferred, a dye to dye the discharged portions of the fabric and a thermo-plastic vehicle for the discharge substances and dye.

8. A transfer sheet to be employed in connection with the ornamentation or marking of fabrics, comprising a base and a transferable medium thereon in the form of a design, said medium containing a thermo-plastic, water-repellant substance to render dye resisting those parts of the fabric to which the design is transferred and a dye incorporated in said substance.

9. A transfer sheet to be employed in connection with the ornamentation or marking of fabrics, comprising a base and a transferable medium thereon in the form of a design, said medium containing stearic acid in which is incorporated a dye-discharging agent and a vat dye.

10. A transfer sheet to be employed in connection with the ornamentation or marking of fabrics, comprising a base and a transferable medium thereon in the form of a design, said medium containing a thermo-plastic, water-repellant substance having incorporated therein a dye-discharging agent whereby the dye-discharging agent can be transferred and subsequently activated.

11. A transfer sheet to be employed in connection with the ornamentation or marking of fabrics, comprising a base and a transferable medium thereon in the form of a design, said medium containing a stearic acid in which is incorporated a finely divided salt of hydrosulfurous acid.

12. A transfer sheet to be employed in connection with the ornamentation or marking of fabrics, comprising a base and a transferable medium thereon in the form of a design, said medium containing stearic acid in which is incorporated a dye adapted to be transferred to the fabric and thereafter wet to dye the fabric.

13. A transfer sheet to be employed in connection with the ornamentation or marking of fabrics, comprising a base and a transferable medium thereon in the form of a design, said medium containing stearic acid, a vat dye, sodium bisulfite and an excess of zinc dust.

In testimony whereof, I have hereunto signed my name, at Philadelphia, in the State of Pennsylvania, this 26th day of May, 1927.

HELENA S. SADTLER.