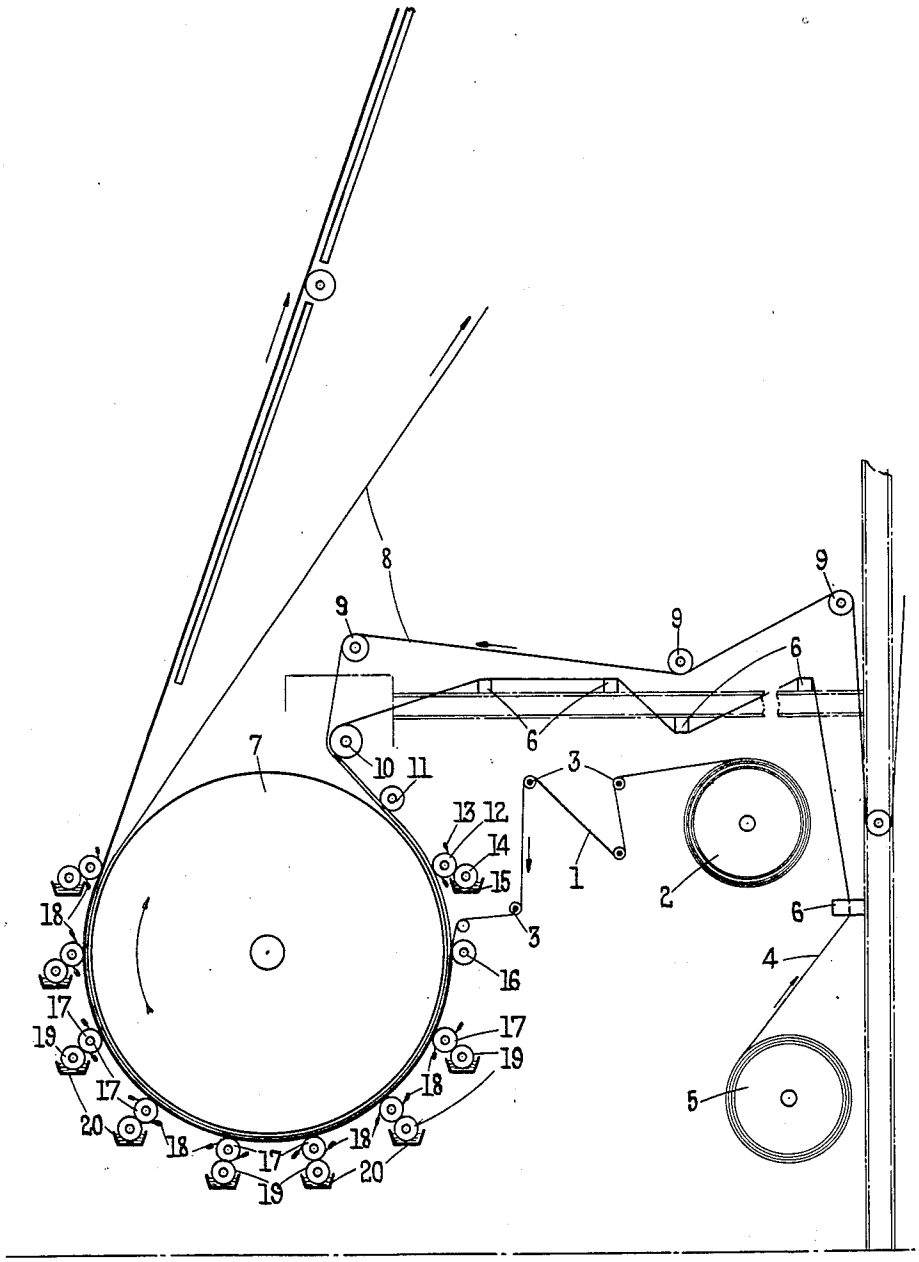
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TREATMENT OF TEXTILE MATERIALS

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TREATMENT OF TEXTILE MATERIALS

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This invention relates to the treatment of textile materials and particularly to the treatment of knitted fabrics, lace, and other materials of delicate construction.

The printing, stencilling, or the like of knitted fabrics (including both weft knitted and warp knitted fabrics), lace, and other materials of readily deformable structure or nature presents serious difficulties since the readily deformable construction or nature of such materials causes the fabrics to creep or slip or become distorted during the printing, stencilling or like operations, thereby causing the applied design to become distorted, uneven or irregular or throwing the design out of register.

According to the present invention knitted fabrics (including both weft and warp knitted fabrics), lace, loosely woven materials (e. g. georgettes), or other materials of easily deformable structure are subjected to the printing, stencilling or other like operation whilst supported by means of a backing of substantially non-elastic structure.

In performing the invention, a woven fabric, e. g. of cotton, is preferably employed as backing or support for the material to be treated, but other materials, e. g. paper, which are capable of being temporarily affixed to the knitted, netted or like fabric in such a manner as to maintain the said fabric in a substantially non-deformable state during the printing, stencilling or like operation, may be employed.

The backing or supporting material is temporarily affixed to the knitted, netted or like fabric by means of a suitable adhesive. The adhesive should of course be such as to allow easy separation of the backing or support from the fabric subsequent to the printing, stencilling or like operation, and should be itself capable of easy removal from the knitted, netted or like fabric. The adhesive may, of course, be applied either to the fabric which is to be subjected to the printing, stencilling or like operation or to the supporting material or to both, but is preferably applied to the supporting material. As an example of an adhesive which may be employed with advantage may be mentioned gum arabic.

The printing, stencilling or like operation may be performed at any time subsequent to the actual affixing of the knitted, netted or like fabric to the supporting material but preferably such printing, stencilling or like operations are performed continuously with the affixing of the fabric to the supporting material.

In a convenient form of execution of the invention, the backing material e. g. a cotton fabric, coming from a roll or other source of the same and preferably passing in contact with suitable tensioning devices, e. g. rollers or bars, in its travel, may be carried, for example by means of an endless blanket, over the surface of a large drum, the rotation of which may be effected, if desired, solely by means of the endless blanket. At a suitable point in the travel of the backing material the adhesive, e. g. gum arabic, may be applied thereto in measured quantity, (which quantity will of course vary according to the nature and weight of the fabric which is to be subjected to the operation); for instance, the backing material coming from the tensioning devices may be pressed into contact with the endless blanket by means of a drag roller at a point at which the blanket is in contact with the drum and the adhesive applied by means of a pad roller supplied with the adhesive and contacting with the backing material at a subsequent point in its travel upon the blanket round the drum. The gummed backing material, in the passage thereof over the drum may then be brought into contact with the knitted, netted or like fabric, (coming from tensioning devices e. g. rollers or bars over which it has passed in its passage from the roll or other source of the fabric) and the two materials pressed together, for example by means of a roller pressing the composite material on to the drum. Thereafter the composite material may be subjected to printing, stencilling or like operations during its passage over the drum. For example a number of suitably engraved rollers contacting with the material on the drum may be supplied with the desired colouring or other materials.

After leaving the drum the printed fabric with its adherent backing may be passed to a suitable drying apparatus or chamber, whereafter the fabric may be separated from its backing and both layers freed from adhesive. The backing material may if desired be returned for use again. If desired, the composite material, i. e. the fabric with its adherent backing, may be batched itself, the separation being performed at some later time.

The accompanying diagrammatic drawing serves to illustrate such a form of execution of the invention as directed to the printing of a knitted fabric but it is to be understood that the invention is in no way limited to this particular form of execution of the invention.

In the drawing

1 represents the knitted fabric to be subjected to the printing operation, the fabric being drawn from a roll 2 of the same.

4 represents the backing material, a cotton fabric, to be secured to the knitted material 1 during the printing operation, the backing material being drawn from a roll 5 of the same.

7 represents a drum over which the fabric 1 supported by the backing material 4 is carried by means of the endless blanket 8 and during

this passage the fabric is subjected to the printing operation by means of the printing rollers.

In the production of the printed knitted fabric the backing material 4 coming from the roll 5 of the same and passing in contact with tensioning bars 6 in its travel is brought into contact with the the endless blanket 8 carried by rollers 9 at a roller 10. From roller 10 the endless blanket 8 carrying the backing material 4 passes in contact with a guide roller 11 and thence into contact with and around the drum 7. The rotation of the drum 7 may be effected, if desired, solely by means of the endless blanket 8. At a suitable point in the travel of the backing material 4, gum arabic is applied thereto by means of a pad roller 12 fitted with doctor blades 13 and supplied with the gum arabic by means of a feed roller 14 dipping into a bath 15 containing the gum arabic. The gummed backing material 4 in the passage thereof over the drum 7 is then brought into contact with the knitted fabric 1 (coming from the tensioning rollers 3 over which it passes in its passage from the roll of fabric 2) and the two materials pressed together by means of a roller 16 pressing the composite material formed on to the drum 7. The composite material is then subjected to the printing operation during its passage over the drum 7 by causing a number of suitably engraved rollers 17 fitted with doctor blades 18 and supplied with the desired colouring or other materials by means of feed rollers 19 dipping into baths 20 containing the colouring or other materials to contact with the composite material in its passage upon the blanket 8 over the drum 7.

It is to be understood that the materials applied by means of the printing, stencilling or like operation may be of any desired nature. As examples of materials which may be applied may be mentioned colouring materials, (e. g. in the form of printing pastes) which may be applied to produce coloured designs; discharge materials, which may be applied to dyed fabrics; resists, which may be applied to fabrics which are to be dyed, delustered or similarly treated subsequently to the printing, stencilling or like operation; and materials which, either themselves or in conjunction with some subsequent treatment, increase or decrease the lustre of the fabrics treated, (this application being of more particular importance in the treatment of fabrics made of or containing organic derivatives of cellulose).

It is to be understood that the fabric treated by the process of the invention may be composed of any material, such for example as silk, cotton, wool, reconstituted cellulose (e. g. viscose or cuprammonium), cellulose acetate or other cellulose esters, methyl cellulose or other cellulose ethers, or other materials or mixtures of these or other materials. The process is especially useful when applied to fabrics composed of artificial yarns or filaments and particularly yarns or filaments of cellulose acetate or other organic derivatives of cellulose, since these materials, owing to the highly smooth nature of such yarns or filaments (as apart from the actual construction of the materials), have a great tendency to slip during printing, stencilling and like operations.

Further, it is to be understood that the process of the present invention may be applied to all fabrics of easily deformable structure such for example as knitted fabrics, netted fabrics and loosely woven fabrics such for instance as georgettes.

What we claim and desire to secure by Letters Patent is:—

1. Process for the printing or stencilling a web of material of easily deformable structure, comprising advancing the web continuously subjecting the web to the printing or stencilling treatment while so advanced and while it is supported in a substantially non-deformable state, by means of an adherent textile backing of substantially non-elastic structure.

2. Process for the printing or stencilling a web of material of easily deformable structure comprising organic derivatives of cellulose, comprising advancing the web continuously subjecting the web to the printing or stencilling treatment while so advanced and while it is supported in a substantially non-deformable state, by means of an adherent textile backing of substantially non-elastic structure.

3. Process for the printing or stencilling a web of material of easily deformable structure comprising celluloseacetate, comprising advancing the web continuously subjecting the web to the printing or stencilling treatment while so advanced and while it is supported in a substantially non-deformable state, by means of an adherent textile backing of substantially non-elastic structure.

4. Process according to claim 1 and wherein the material is supported on a woven cotton fabric of substantially non-elastic structure.

5. Process according to claim 3 and wherein the material is supported on a woven cotton fabric of substantially non-elastic structure.

6. Process according to claim 1 and wherein the material is secured to the backing by means of gum arabic.

7. Process according to claim 3 and wherein the material is secured to the backing by means of gum arabic.

8. Process according to claim 1 and wherein the said treatment is effected continuously with the affixing of the materials to the said backing.

9. Process according to claim 3 and wherein the said treatment is effected continuously with the affixing of the materials to the said backing.

10. Process for the printing or stencilling of materials of easily deformable structure, comprising carrying a woven cotton web by means of an endless blanket over the surface of a large drum, applying an adhesive thereto, bringing the material to be treated into contact therewith, and causing the same to adhere thereto, and subjecting the composite material to the said treatment during its further passage over the drum.

11. Process for the printing or stencilling of knitted or loosely woven materials comprising cellulose acetate, comprising carrying a woven cotton web by means of an endless blanket over the surface of a large drum, applying an adhesive thereto, bringing the material to be treated into contact therewith, and causing the same to adhere thereto, and subjecting the composite material to the said treatment during its further passage over the drum.

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