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PROCESS OF DYEING MULTICOLORED
FABRICS IN THE PIECEGeorge R. Meyers, Hawthorne, N. J., assignor to
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poration of New JerseyNo Drawing. Application February 24, 1938,
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- 8 Claims. (Cl. 28-1)

The invention relates to a process of dyeing textile fabrics, particularly those constituting material for necktie and dress material, the fabric being of a composite character and having a plurality of colors forming various designs, either figured, striped, embodying heather effects, or mixtures thereof.

The textile fabric to which my invention particularly relates is constituted of pieces of material formed in part by rayon of one process, for instance, that known as the viscose process, or similar processes, such as the nitrocellulose process or the cupra-ammonium process. This first type of material, in accordance with my invention, is embodied in one part of the composite fabric.

For the other part, the material for the composite fabric is constituted of a rayon manufactured by an acetate process having acetate esters as the base for the material. Any other similar type of artificial fibre made in accordance with the acetate process is included in the general term "acetate process rayon".

The primary object of the invention is to provide a process of dyeing a multi-colored fabric in the piece in a single dyeing operation and in a single dyeing vat after the weaving of the fabric has been completed. I am aware that it has been heretofore suggested, and such suggestion carried out, to weave a fabric, composite in character, of two different materials, for instance, of cotton and acetate yarn, and to dye such fabric in the piece in the same dyeing vat. In such process, however, two steps are necessary, one in which the cotton is dyed first by a dye which has no effect upon the acetate rayon and thereafter such fabric is immersed in another dye which affects the acetate yarn but has no effect upon the already dyed cotton. This process may be carried out in the reverse order, i. e. by dyeing the acetate yarn first in a dye which will have no effect upon the cotton, and thereafter dyeing the cotton in a dye which has no effect upon the acetate yarn.

My process is distinguishable from the above suggested process in that I am enabled to dye a multi-colored fabric in the piece in a single operation after weaving and in a single dye vat. In accordance with my invention, I dye the yarn, for instance, of the viscose process rayon, and thereafter weave such dyed yarn into a fabric in which such yarn constitutes the warp, with rayon of the acetate process, and thereafter, when the fabric has been completely woven, dye such fabric in the piece in a dye which effects the coloring of

the acetate process rayon without any effect upon the viscose process rayon constituting the other portion of the woven fabric.

One feature of my invention, which I believe contributes in great measure to the successful carrying out of the process, is that the yarn which is to constitute the warp of the fabric is given a twist to boost the original or ordinary five turns per inch to ten turns per inch. I have found that the use of the ordinary five turns in the twist of the threads to the inch renders the yarn, when the warps constituted thereof are entered into a shaft of jacquard harness, not capable of withstanding the friction of the harness and the reed of the loom, so that when the woven fabric taken from such loom is attempted to be dyed, the threads constituting, for instance, the stripes of a design and produced by such warp, have been frayed to a considerable extent by friction. Such fraying or exfoliation produced by the chafing or friction causes an adverse effect upon the material by the dye, so that there is no clear color demarcation in the finished piece between the stripes dyed one color and the surrounding areas dyed another color. I have found that by boosting the original twist from five turns to the inch to ten turns to the inch, I prevent the chafing or exfoliation in the weaving and am enabled to procure a distinct color demarcation and without any fraying of the warp.

For the yarn which is to constitute the warp of the woven fabric to be dyed in accordance with my novel process, I may use any one of the well-known artificial fibres processed to produce what is known in the art as rayon, which rayon may be produced by the viscose process, the nitrocellulose process, or the cupra-ammonium process. Instead of such artificial fibres, ordinary cotton may likewise be used for certain types of fabric. It is to be understood that I do not wish to be limited in the application of my process to any particular type of material either for that constituting the warp or for that to constitute the other portion of the finished fabric. For such other portion any of the well-known acetate process rayons having acetate esters as their base may be used.

As a particular example of carrying out my novel process, in which examples I use the words "acetate process" and "viscose process", as broad terms of definition, a certain portion of the viscose process rayon is first tinted in the skein with a fugitive tint to discern such rayon from the acetate process rayon in the various stages of manufacture of the finished piece. It should be

understood that the use of this fugitive tint is merely for convenience in fabrication to guide the operator in the selection and recognition of the viscose process rayon from the other material.

5 This fugitive tint, applied to the viscose rayon in the skein, will be eventually removed from the yarn in the stripping or boiling off of the fabric hereinafter described. Such yarn, it is to be noted, will remain practically white when the
10 acetate process rayon is dyed with the dye effecting the same.

The yarn constituted of the viscose process rayon including the part thus tinted, is, in accordance with my process, now dyed with indanthrene or naphthol colors, which colors are fast to a boiling soap solution. These colors are also fast to a treatment of the fabric with a solution of permanganate of potash for a purpose hereinafter described.

20 The yarn constituted of the viscose process rayon is now twisted to boost the original twist from five turns per inch to ten turns per inch.

The warp is then prepared from these yarns, using them in various proportions and in various configurations to obtain any desired design. The warp is then sized on a slasher with a sizing solution containing gelatin, glycerin, olive oil soap and water. Upon completion of the slashing process, the warps are ready to be entered and
30 twisted into the loom for beginning of the weaving process.

My invention, of course, is not limited in any respect to a particular type of weaving. Any type of weaving commonly known in the trade
35 produce designs of substantially every conceivable type of description or any combination of designs may be employed in the same fabric to produce any desired effect.

After entrance and twisting of the warp into
40 the loom, the filler, which may be constituted of either or both types of material, is woven, with the warp, into the cloth.

When the fabric is removed from the loom, after inspection and the clipping of any loose
45 ends, long knots in the yarn close to the fabric has been accomplished in well-known manner, the fabric is stripped or boiled off to remove the size and the fugitive tints applied to the white viscose process rayon.

50 The fabric is then dyed in one process by dipping the same into a container of acetate dyestuff such as is available on the market under the names "Cellotone" or "Sira". In this dyeing process the fabric may be dyed into any color
55 of any shade including the deepest. The indanthrene or naphthol colors with which the yarns constituting the warp have been dyed will not be affected and there will be no change whatsoever in the color of the viscose process yarns constituting the warp of the finished fabric and which
60 thus will have a color contrasting with that of the remaining portion of the fabric.

It is to be noted that the natural rayon (viscose process) which has been tinted with the
65 fugitive tint, will be practically white. In the event that the rayon thus tinted, which has now been removed by the stripping or boiling off process, should not be clear white or practically white, the material may be cleared with a solution of permanganate of potash, thereby producing a commercially clear white.
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Upon completion of the above steps, the fabric is finished in the usual manner to remove "dye-house wrinkles" and to give the fabric a smooth surface and mellow hand.

The product of the process just described is excellently suitable for use in the manufacture of ties and dresses as there is practically no limit to the vast combination of colors and designs which may be produced in the fabric. Such fabric may be constituted of a series of stripes of different colors, of different shades, formed by the viscose process rayon, and a plurality of different shades, and different reflective surfaces may be imparted to the body of the fabric.
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I claim:

1. The herein described process of manufacturing a composite fabric which comprises dyeing a portion of yarn of one process in the skein with a fugitive tint, dyeing the remainder of such
15 yarn with a color fast to a boiling soap solution, preparing a portion of the composite fabric from such yarn, in such proportions and configurations as to obtain any desired design, sizing the yarn on a slasher, weaving said fabric portion with
20 another portion constituted of a rayon of another process, stripping the fabric of size and the fugitive tint, and thereafter dyeing the completed fabric in the piece with dyestuff which effects the dyeing of the rayon of the second process but
25 which has no effect upon the yarn of the first process.

2. The herein described process of manufacturing a composite fabric which comprises dyeing a yarn of one process with a color fast to a boiling
30 soap solution, twisting such yarn to boost the original twist thereof to ten turns per inch, preparing a portion of the composite fabric from such yarn, in such proportions and configurations as to obtain any desired design, weaving said
35 portion with another portion constituted of a rayon of another process, and thereafter dyeing the completed fabric in the piece with dyestuff which effects the dyeing of the rayon of the second process but which has no effect upon the
40 yarn of the first process.

3. The herein described process of manufacturing a composite fabric which comprises dyeing a portion of yarn of one process in the skein with a fugitive tint, dyeing the remainder of such
45 yarn with a color fast to a boiling soap solution, twisting such yarn to boost the original twist thereof to ten turns per inch, preparing a part of the composite fabric from such yarn, in such proportions and configurations as to obtain any desired design, sizing the yarn on a slasher, weaving said part with another part constituted of a rayon of another process, stripping the fabric of size and the fugitive tint, and thereafter dyeing the completed fabric in the piece with dyestuff which effects the dyeing of the rayon of the second process but which has no effect upon the yarn of the first process.
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4. The herein described process of manufacturing a composite fabric which comprises dyeing a portion of the material constituting one of the base materials of the composite fabric, in the skein with a fugitive tint, dyeing the remainder of such material with a color fast to a
55 boiling soap solution, preparing a part of the composite fabric from said material, in such proportions and configurations as to obtain any desired design, sizing the material on a slasher, weaving said first part with another part constituted of an acetate process rayon, stripping
60 the fabric of size and fugitive tint, and thereafter dyeing the completed fabric in the piece with acetate dyestuff for effecting the dyeing of the acetate process rayon but without any effect of such dyes upon the color of the material con-
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stituting the first part of the composite fabric.

5. The herein described process of manufacturing a composite fabric which comprises dyeing a material constituting one of the base materials of the composite fabric, with a color fast to a boiling soap solution, twisting such material to boost the original twist thereof to ten turns per inch, preparing a part of the composite fabric from said material, in such proportions and configurations as to obtain any desired design, weaving said part with another part constituted of an acetate process rayon, and thereafter dyeing the completed fabric in the piece with acetate dyestuff for effecting the dyeing of the acetate process rayon but without any effect of such dyes upon the color of the material constituting the first part of the composite fabric.

6. The herein described process of manufacturing a composite fabric which comprises dyeing a portion of the material constituting one of the base materials of the composite fabric, in the skein with a fugitive tint, dyeing the remainder of such material with a color fast to a boiling soap solution, twisting such material to boost the original twist thereof to ten turns per inch, preparing one part of the composite fabric from said material, in such proportions and configurations as to obtain any desired design, sizing the material on a slasher, weaving said part with another part constituted of an acetate process rayon, stripping the fabric of size and fugitive

tint, and thereafter dyeing the completed fabric in the piece with acetate dyestuff for effecting the dyeing of the acetate process rayon but without any effect of such dyes upon the color of the material constituting the first part of the composite fabric.

7. The herein described process of dyeing a composite fabric, which comprises dyeing a portion of yarn of one process in the skein with a fugitive tint, dyeing the remainder of such yarn with a color fast to a boiling soap solution, and after weaving said yarn with a yarn constituted of a rayon of another process, dyeing the composite fabric in the piece with dyestuff effecting the dyeing of the rayon of the second process, but without any effect of such dyes upon the color of the yarn of the first process.

8. The herein described process of dyeing a composite fabric, which comprises dyeing a portion of a viscose process yarn in the skein with a fugitive tint, dyeing the remainder of such yarn with a color fast to a boiling soap solution, and after weaving said viscose process yarn with an acetate process rayon to produce said composite fabric, dyeing the composite fabric in the piece with acetate dyestuff for effecting the dyeing of the acetate process yarn in the material but without any effect of such dyes upon the color of the viscose yarn in the fabric.

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