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UNITED STATES PATENT OFFICE.

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DYE SOLUTION.

No Drawing. Original application filed June 26, 1922, Serial No. 571,098, and in Germany July 29, 1921. Divided and this application filed June 8, 1923. Serial No. 644,244.

This is a divisional application of my application for Letters Patent filed June 26, 1922, Ser. No. 571,098 and for which the U. S. Letters Patent No. 1,485,790, dated March 4, 1924, has already been granted.

As well known, the organic dyestuffs of basic or acid nature are utilized for dyeing textile fibres, by dyeing in a neutral or slightly acid solution, with or without mordant, at a relatively high temperature, or by fixing the printed dyes by steaming.

I have found that dyeings can be obtained at ordinary temperatures, which are fast to washing and rubbing, if dye solutions are employed which contain, with or without a thickening substance, about 10 to 20 per cent of glycolic acid. When used in printing, these solutions show the advantage that the steaming can be omitted. The present invention relates consequently to dye solutions which are characterized by a content of about 10 to 20 per cent of glycolic acid and which are capable of producing dyeings and printings on textile fibres and other substances, such as wood, paper, feathers, leather, furs, straw, hemp, artificial substances, etc.

The process for the manufacture of the said dye solutions may depend on the dyeing quality of the dyestuff in as far as basic dyestuffs require an addition of tannin for their employment on cotton.

The essential condition for the manufacture of these solutions is that the dyestuffs have been rendered soluble and may remain entirely soluble.

The following examples illustrate the preparation and the composition of the new dye solutions and their use for dyeing and printing purposes.

Example I.

1 gr. of a basic dyestuff is dissolved in 5 gr. of acetic acid of 40 per cent and 20 gr. of boiling water; to the solution thus obtained there are added 52 gr. of tragacanth gum thickening and 2 gr. of tannin, 20 gr. of glycolic acid are then added and after dissolution the dye-solution is ready for use.

After printing the fabric with this dye, the fabric is dried and passed, without steaming, through a cold or hot bath of tartar emetic containing, as usually, 10 gr. of tartar emetic to a liter of the bath. Afterwards the fabric is well rinsed and soaped. The dyestuff is regularly and quickly fixed and cannot be removed by rubbing.

Example II.

For unions half of silk and half of cotton there is prepared in the same manner as for cotton a dyeing bath having the following composition: 1 gr. of basic dyestuff is dissolved in 5 gr. of acetic acid of 40 per cent and 20 gr. of boiling water and there are added afterwards 42 gr. of cold water, 10 gr. of tragacanth gum thickening, 2 gr. of tannin and 20 gr. of glycolic acid.

The fabric pieces are impregnated with this dyeing bath in a fulling mill and pressed out in such a manner that in the mo'stened state they show an increase of weight of 100 per cent. After they have been well dried, they are passed, without steaming, through the usual bath of tartar emetic, rinsed and soaped.

Example III.

For wool and silk the dye solution is prepared, in a manner similar to that of Example 1 and formed of 1 gr. of acid dyestuff dissolved in 5 gr. of acetic acid of 40 per cent and 20 gr. of hot water and there are added 44 gr. of cold water, 10 gr. of tragacanth gum thickening and 20 gr. of glycolic acid.

The fabric is dyed in pieces in a fulling mill and finished without steaming.

The new dye solutions are utilizable not only in the industry for dyeing and printing textile fabrics, but can also owing to their stability and their property of being easily manageable be used for purposes of industrial art, as they permit a hitherto unknown fast dyeing of textile fabrics by applying the dye solution by painting or sprinkling. They are utilizable in the same manner for paper, straw, leather, wood, feathers, furs, artificial substances, etc.

What I claim is:

1. As a new article of manufacture, a new dye solution having a content of about 10 to 20 per cent of glycolic acid and containing at least one dyestuff, which needs no subsequent oxidation after the application of the dye solution to dyeing, printing, painting or the like purposes.

2. As a new article of manufacture, a new

dye solution containing a thickening and having further a content of about 10 to 20 per cent of glycolic acid, the said dye solution containing at least one dyestuff which needs no subsequent oxidation after the application of the dye solution to dyeing, printing, painting and the like purposes.

3. As a new article of manufacture, a new dye solution containing tannin and having further a content of about 10 to 20 per cent of glycolic acid, the said dye solution containing at least one dyestuff which needs no subsequent oxidation after the application of the dye solution to dyeing, printing, painting and the like purposes.

4. As a new article of manufacture, a new dye solution containing a thickening and tannin and having further a content of about 10 to 20 per cent of glycolic acid, the said dye solution containing at least one dyestuff which needs no subsequent oxidation after the application of the dye solution to dyeing, printing, painting and the like purposes.

In witness whereof I have hereunto signed my name this 28th day of May, 1923.

KARL LÜTTIN.