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UNITED STATES PATENT OFFICE.

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PROCESS OF DYEING CELLULOSE ESTERS AND ETHERS.

No Drawing. Application filed January 24, 1925, Serial No. 4,501, and in Germany January 29, 1924.

It is known that the hitherto used acid dyestuffs of the anthraquinone series do not give any or only very weak dyeings on acidyl cellulose.

Now I have found that the mono-sulfonated 1.4-diamino- and amino-oxyanthraquinones, their alkyl- and aryl- or aralkyl- substitution products, containing the sulfo-group not in the side chain, but in 2-position or 3-position of the anthraquinone nucleus, yield direct dyeings on acetyl cellulose in deep tints. The dyeings thus obtained possess a good fastness to washing and an excellent fastness to light.

The following example illustrates my invention:

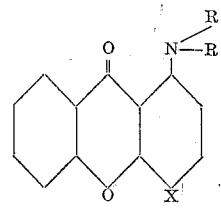
1 kg. of acetate silk is dyed for ¾–1 hour at 60–70° C. in a dye bath of 20–25 liters, in which 20 grams of 1.4-diaminoanthraquinone-2-sulfonic acid are dissolved, with or without the addition of salts or acids and with or without protective colloids. In this manner a deep violet tint is obtained on the fibre.

If for the 1.4-diaminoanthraquinone-2-sulfonic acid is substituted the 4-oxy-1-aminoanthraquinone-3-sulfonic acid, a reddish-violet tint is obtained and when using 1-phenylamino-4-aminoanthraquinone-3-sulfonic acid a deep vivid blue tint. When using 1-phenylamino-4-amino-7-chloranthraquinone-3-sulfonic acid, an intense blue tint with a green hue is obtained.

By cellulose esters I understand not only the real esters obtainable by causing acids to act on cellulose, but also the so-called ethers, obtainable for instance by causing halogen alkyls to act on cellulose compounds. It is evident that the process may also be applied to products containing cellulose esters or ethers and other vegetable or animal fibres.

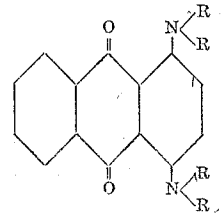
I claim:

1. The process of dyeing cellulose esters and ethers, consisting in dyeing these materials with the mono-sulfonic acids of 1-aminoanthraquinones of the following formula:



wherein R represents hydrogen, an alkyl- aryl- or aralkyl-group and X represents an amino- or hydroxy-group or an alkyl-, aryl- or aralkyl- amino- or hydroxy-group, the sulfo group being in the same nucleus of the anthraquinone as the amino group.

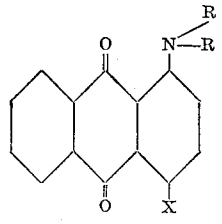
2. The process of dyeing cellulose esters and ethers consisting in dyeing these materials with the mono-sulfonic acids of 1-4-diamino-anthraquinones of the following formula:



wherein R represents hydrogen, an alkyl- aryl- or aralkyl-group, the sulfo group being in the same nucleus of the anthraquinone as the amino groups.

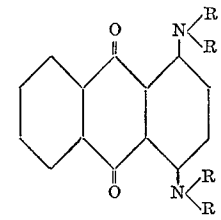
3. The process of dyeing cellulose esters and ethers, consisting in dyeing these materials with 1-phenylamino-4-aminoanthraquinone-3-sulfonic acid.

4. As new products, cellulose esters and ethers dyed with the mono-sulfonic acids of 1-aminoanthraquinones of the following formula:



wherein R represents hydrogen, an alkyl-, aryl- or aralkyl-group and X represents an amino- or hydroxy-group or an alkyl-, aryl- or aralkyl- amino- or hydroxy-group, the sulfo group being in the same nucleus of the anthraquinone as the amino group.

5. As new products, cellulose esters and ethers dyed with mono-sulfonic acids of 1.4-diaminoanthraquinones of the following formula:



wherein R represents hydrogen, an alkyl-, aryl- or aralkyl-group, the sulfo group being in the same nucleus of the anthraquinone as the amino groups, said products being violet to blue materials of excellent fastness.

6. As new products, cellulose esters and ethers dyed with 1-phenylamino-4-aminoanthraquinone-3-sulfonic acid, said products being blue materials of excellent fastness.

In testimony whereof, I affix my signature.

CARL ERICH MÜLLER.