Patented Apr. 9, 1929. 1,708,635

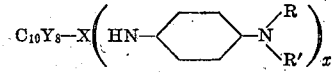
UNITED STATES PATENT OFFICE.

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PROCESS OF TREATING ANIMAL FIBERS.

No Drawing. Application filed December 6, 1927, Serial No. 238,224, and in Germany June 16, 1926.

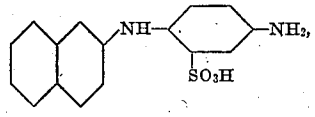
This invention relates to a process of treating animal fibers in an acid bath with a sulphonated derivative of naphthylamines of the general formula



wherein Y means H or univalent substituents such as —OH, —NH_2 or halogen and wherein R and R′ mean H, alkyl, aryl or substituted aryl residues and x stands for a whole number not greater than 2, these naphthylamine derivatives containing at least one —SO_3H— group, and then treating the fibers with a suitable oxidizing agent. Valuable dyeings are thus obtained.

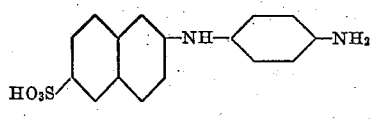
The following examples illustrate the invention, the parts being by weight:

Example 1.—100 parts of wool are entered at ordinary temperature into a bath consisting of 4000 parts of water, 6 parts of 4′-aminosulphophenyl-2-naphthylamine of the formula



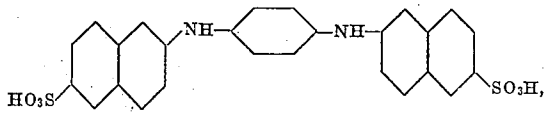
10 parts of crystallized sodiumsulphate and 5 parts of acetic acid. The temperature is raised to boiling, 3 parts of sulphuric acid are added and the whole is boiled for 1 hour. After the goods have been washed they are handled for about half an hour in an boiling bath of 3 parts of potassium bichromate and 3 parts of sulphuric acid in 4000 parts of water, whereby a black having a full bloom is produced on the fiber.

In similar manner a black dyeing is obtained when 4′-aminophenyl-2-naphthylamine-6-sulphonic acid of the formula



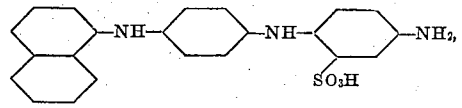
is used.

Example 2.—100 parts of wool are entered at ordinary temperature into a bath consisting of 4000 parts of water, 6 parts of 1.4-di-(6-sulpho-2-naphthylamine)-benzene of the formula



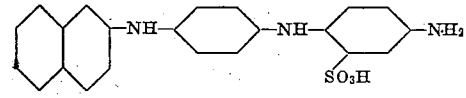
10 parts of crystallized sodium sulphate and 5 parts of sulphuric acid. The temperature is raised to the boiling, boiling continued for one hour, 3 parts of potassium bichromate added and boiling continued for a further half hour; the goods are then washed and dried, there is thus obtained a fast deep black.

Example 3.—100 parts of wool are entered into a bath consisting of 6 parts of the sodium salt of 4-α-naphthylamino-4′-aminodiphenylamine-2′-sulphonic acid of the formula



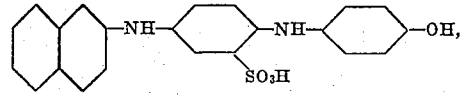
10 parts of crystallized sodium sulphate and 15 parts of acetic acid in 4000 parts of water. The bath is maintained boiling for an hour, where upon the wool is washed and handled for about half an hour in a boiling hot bath of 3 parts of potassium bichromate and 3 parts of sulphuric acid in 4000 parts of water, whereby a fast black is produced.

The like result is obtained when 4-β-naphthylamino-4′-aminodiphenylamine-2′-sulphonic acid of the formula



is used.

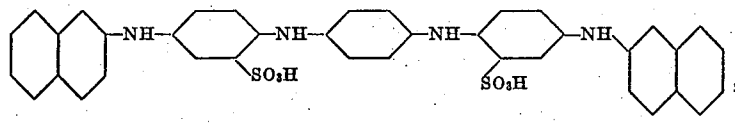
Example 4.—100 parts of wool are treated as above described in a bath consisting of 6 parts of the sodium salt of 4-β-naphthylamino-4′-oxydiphenylamine-2-sulphonic acid of the formula



10 parts of crystallized sodium sulphate, 10 parts of sulphuric acid and 4000 parts of

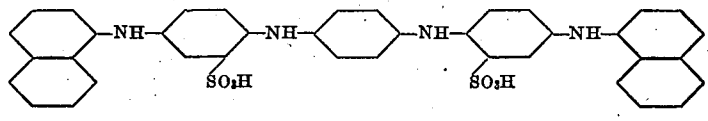
water. The washed wool is then subsequently treated as described in Example 3. There is produced a fast full black.

Example 5.—100 parts of wool are handled in a bath consisting of 6 parts of the sodium salt of 1.4-di(4-β-naphthylamino-2-sulphophenylamino)-benzene of the formula



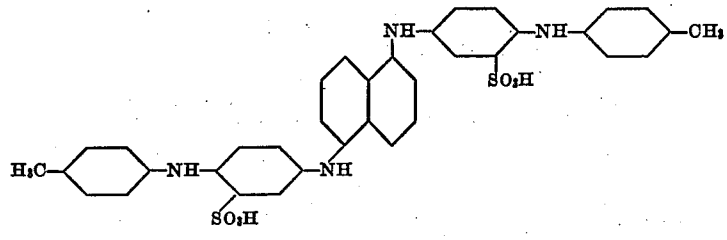
10 parts of crystallized sodium sulphate, 4 parts of sulphuric acid and 4000 parts of water for 1 hour while the bath is boiling hot; the treatment is then continued in the same bath for half an hour after addition of 3 parts of potassium bichromate. There is produced a fast black dye.

A like result is obtained when the corresponding α-naphthyl derivative of the formula



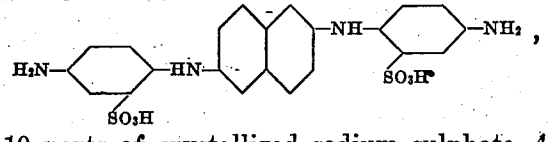
is used.

Example 6.—100 parts of wool are boiled for one hour in a bath consisting of 6 parts of 1.5-di-(4-paramethylphenylamino-3-sulphophenylamino)-naphthalene of the formula



10 parts of crystallized sodium sulphate, 4 parts of sulphuric acid and 4000 parts of water; after washing the goods they are further threated in a boiling bath of 3 parts of potassium bichromate and 3 parts of sulphuric acid in 4000 parts of water for half an hour. There is produced a deep black.

Example 7.—100 parts of wool are handled for 1 hour at the boiling point in a bath consisting of 3 parts of 2.6-di(4-amino-2-sulphophenylamino)-naphthalene of the formula

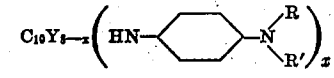


10 parts of crystallized sodium sulphate, 4 parts of sulphuric acid and 4000 parts of water and then for a further half an hour in the same bath after addition of 15 parts of potassium bichromate. There is produced a dark green dyeing.

Example 8.—100 parts of weighted silk are handled in a bath of 16 parts of 4-aminosulphophenyl-2-naphthylamine (see Example 1), 15 parts of acetic acid, 10 parts of crystallized sodium sulphate and 1000 parts of water which is kept boiling hot; the goods are then washed and after-chromed. There is produced a full blue black.

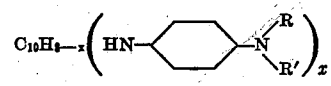
What we claim is:

1. A process of treating animal fibers in an acid bath with a sulphonated derivative of naphthylamines of the general formula



wherein Y means H or univalent substituents such as —OH, —NH_2 or halogen and wherein R and R′ mean H, alkyl, aryl or substituted aryl residues and x stands for a whole number not greater than 2, these naphthylamine derivatives containing at least one —SO_3H group, and then treating the fibers with an oxidizing agent.

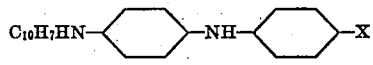
2. A process of treating animal fibers in an acid bath with a sulphonated derivative of naphthylamines of the general formula



wherein R and R′ mean H, alkyl, aryl or substituted aryl residues and x stands for a whole number not greater than 2, these naphthylamine derivatives containing at least one —SO_3H group, and then treating the fibers with an oxidizing agent.

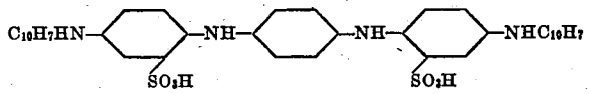
3. A process of treating animal fibers in

an acid bath with a sulphonated derivative of naphthylamines of the general formula



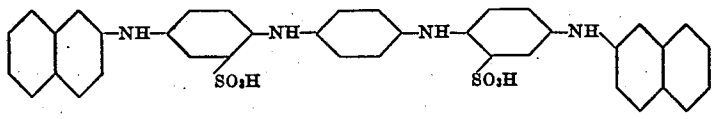
X meaning H, alkyl, —OH, —NH_2 or an aminoaryl residue, these derivatives containing at least one —SO_3H group, and then treating the fibers with an oxidizing agent.

4. A process of treating animal fibers in an acid bath with a sulphonated derivative of naphthylamines of the general formula



and then treating the fibers with an oxidizing agent.

5. A process of treating animal fibers in an acid bath with a sulphonated derivative of 2-naphthylamine of the general formula



and then treating the fibers with an oxidizing agent.

In testimony whereof, we affix our signatures.

BERNHARD SCHÖNER.
PAUL VIRCK.