

UNITED STATES PATENT OFFICE

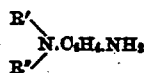
KARL MARX, OF DESSAU IN ANHALT, AND ERICH LEHMANN, OF WOLFEN, NEAR BITTERFELD, GERMANY, ASSIGNORS TO GENERAL ANILINE WORKS, INC., OF NEW YORK, N. Y., A CORPORATION OF DELAWARE

DYING FURS, HAIRS, FEATHERS, AND SIMILAR ARTICLES

No Drawing. Application filed April 14, 1931, Serial No. 530,133, and in Germany April 30, 1930.

Our present invention relates to a new process for dyeing hairs, furs, feathers and similar articles.

We have found that compounds of the following constitution



wherein R' stands for cyclohexyl, methylcyclohexyl or the like, and R'' stands for a similar hydrogenated cyclic radicle or hydrogen, alkyl, aryl or aralkyl, are particularly suited for dyeing hairs, furs, feathers and similar articles. These compounds yield in the presence of an oxidizing agent a great variety of shades on furs, pre-mordanted or not, which may be varied by using a compound of the formula given above, in which the benzene nucleus carrying the terminal NH₂-group is substituted by a univalent substituent as, for instance, by halogen, the nitro group, alkyl, oxyalkyl and so on.

There can be used for the dyeing process neutral, acid or alkaline solutions.

The following examples serve to illustrate the invention, but they are not intended to limit it thereto.

Example 1.—3 grams of 1-(methyl cyclohexylamino)-4-aminobenzene are dissolved in 1000 cc. of water and the solution is mixed with 30 cc. of a 3% hydrogen peroxide solution. White rabbit skins pre-mordanted with chromium salts or copper salts are dyed at ordinary temperature for about 3 hours in the bath thus prepared. They are dyed a clear bluish-black to greenish-black tint.

Example 2.—2 grams of 1-(methyl cyclohexylamino)-4-aminobenzene-hydrochloride, dissolved in 1000 cc. of water and mixed with 20 cc. of a 3% hydrogen peroxide solution, dye non-mordanted white rabbit skin a clear reddish-grey tint.

Example 3.—3 grams of 1-(benzyl cyclohexylamino)-4-aminobenzene, dissolved in 1000 cc. of water and mixed with 30 cc. of a

3% hydrogen peroxide solution, dye rabbit skin mordanted with a chromium salt a bluish-black, and skins mordanted with copper salts a greenish-black tint.

Example 4.—3 grams of 1-methoxy-2-cyclohexylamino-4-aminobenzene-hydrochloride are dissolved in 1000 cc. of water and mixed with 30 cc. of a 3% hydrogen peroxide solution. White rabbit skins pre-mordanted with copper salts are dyed a bluish-grey tint.

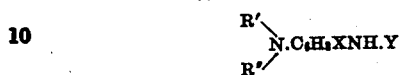
Example 5.—3 grams of 1-methyl-2-cyclohexylamino-5-aminobenzene-hydrochloride, dissolved in 1000 cc. of water and mixed with 3 cc. of a 3% hydrogen superoxide solution, dye white rabbit skin mordanted with copper salts a blue-grey tint. When dyeing white rabbit skin pre-mordanted with a copper salt with 3 grams of the same base in a neutral or feebly alkaline solution, a bluish-black tint is produced.

As mentioned above, our invention is not limited to the foregoing examples or to the details given therein. Other oxidizing agents, well-known in the art is, for instance, an alkali metal bichromate or chromic acid, may be used in order to develop the dyeing. The benzene nucleus on which the substituted and unsubstituted amino groups are bound, may contain halogen, alkyl, oxyalkyl or nitro groups. Other compounds covered by the general formula given above, may be employed; we enumerate, for instance, the following compounds which may be used in a completely analogous manner:—1-(dicyclohexylamino)-4-aminobenzene, 1-(phenyl cyclohexylamino)-4-aminobenzene, 1-cyclohexylamino-2-chloro-4-aminobenzene, 1-cyclohexylamino-2-chloro-5-aminobenzene, 1-cyclohexylamino-5-nitro-3-aminobenzene, 1-cyclohexylamino-2-nitro-5-aminobenzene, 1-(dicyclohexylamino)-2-chloro-4-aminobenzene, 1-(dicyclohexylamino)-2-nitro-4-aminobenzene, 1-(phenylcyclohexylamino)-2-

chloro-4-aminobenzene, 1-(phenylcyclohexyl-amino)-2-nitro-5-aminobenzene.

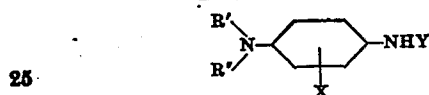
What we claim is:—

1. The process for dyeing furs, hairs, feathers and similar articles which comprises treating the said material in a bath containing an oxidizing agent and a compound of the following constitution:



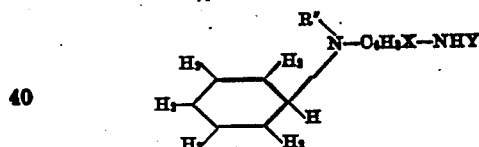
wherein R' stands for a cyclohexyl radicle, R'' for hydrogen or an alkyl, aryl aralkyl or cyclohexyl group, X stands for hydrogen, halogen or an alkyl, oxyalkyl or nitro group and Y is H or H.HCl.

2. The process for dyeing furs, hairs, feathers and similar articles which comprises treating the said material in a bath containing an oxidizing agent and a compound of the following constitution:



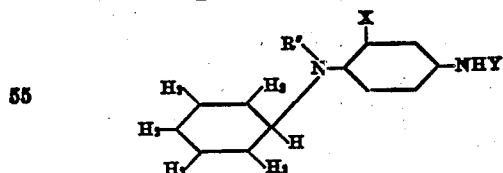
wherein R' stands for a cyclohexyl radicle, R'' for hydrogen or an alkyl, aryl, aralkyl or cyclohexyl group, X stands for hydrogen, halogen or an alkyl, oxyalkyl or nitro group and Y is H or H.HCl.

3. The process for dyeing furs, hairs, feathers and similar articles which comprises treating the said material in a bath containing an oxidizing agent and a compound of the following constitution:



wherein R'' means hydrogen or an alkyl, aryl or aralkyl group. X means hydrogen or an alkyl, oxyalkyl, halogen or nitro group and Y is H or H.HCl.

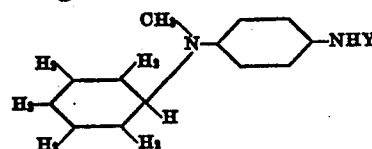
4. The process for dyeing furs, hairs, feathers and similar articles which comprises treating the said material in a bath containing an oxidizing agent and a compound of the following constitution:



wherein R'' means hydrogen or an alkyl, aryl or aralkyl group, X means hydrogen or an alkyl, oxyalkyl, halogen or nitro group and Y is H or H.HCl.

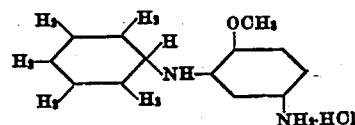
5. The process of dyeing furs, hairs, feathers and similar articles which comprises treating the said material in a bath contain-

ing an oxidizing agent and a compound of the following constitution:

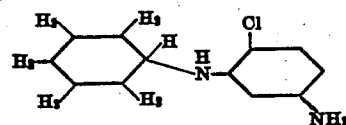


wherein Y is H or H.HCl.

6. The process for dyeing furs, hairs, feathers and similar articles which comprises treating the said material in a bath containing an oxidizing agent and a compound of the following constitution:



7. The process for dyeing furs, hairs, feathers and similar articles which comprises treating the said material in a bath containing an oxidizing agent and a compound of the following constitution:



In testimony whereof, we affix our signatures.

KARL MARX.
ERICH LEHMANN.