UNITED STATES PATENT OFFICE.

MAX WEILER, OF ELBERFELD, GERMANY, ASSIGNOR TO FARBENFABRIKEN VORM. FRIEDR. BAYER & CO., OF ELBERFELD, GERMANY, A CORPORATION OF GERMANY.

DYE.

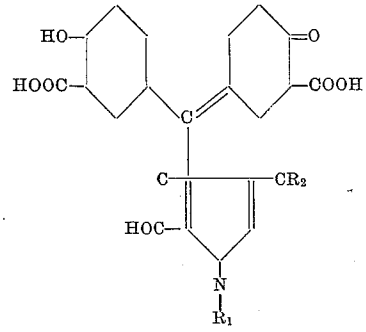
1,023,977. Specification of Letters Patent. Patented Apr. 23, 1912.

No Drawing. Application filed September 7, 1910. Serial No. 580,859.

To all whom it may concern:

Be it known that I, MAX WEILER, doctor of philosophy, chemist, citizen of the German Empire, residing at Elberfeld, Germany, have invented new and useful Improvements in New Dye, of which the following is a specification.

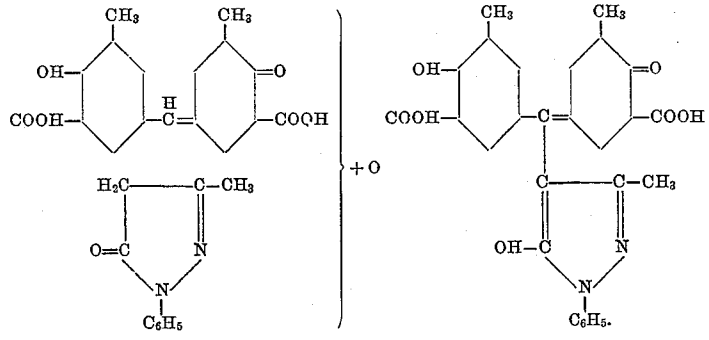
My invention relates to the manufacture and production of new dyestuffs of the aurin series, which are obtained by condensing in the presence of oxidizing agents methylene oxycarboxylic acids, especially methylene-di-salicylic acid and methylene-di-ortho-cresotinic acid with pyrazolones containing probably in their molecule the following group:



R_1 meaning the phenyl- or naphthyl radical, and R_2 the methyl- or carboxyl group; the hydrogenes of the two carboxylic-benzene nuclei may be further substituted by the methyl- and hydroxyl group.

The new dyes are dark powders soluble in dilute caustic soda lye generally with a red color, dyeing wool from acid baths generally from red to violet to brown shades, which can be chromed on the fiber.

In order to illustrate the new process more fully the following example is given, the parts being by weight:—21.1 parts of methylene-di-ortho-cresotinic acid and 12.8 parts of 3-methyl-1-phenyl-5-pyrazolone are mixed with 320 parts of strong sulfuric acid and the necessary quantity of nitrosyl sulfuric acid and then stirred at from 20–45° C. until the quantity of the dyestuff produced is not further increased and the evolution of nitrogen oxids ceases. The product of the reaction is poured on ice and the dyestuff is filtered off. It is a yellowish-brown powder soluble in hot water with an orange color, in dilute caustic soda lye with an orange-red color, capable of dyeing wool in orange shades which on chroming turn into an intense brownish-orange and is probably obtained according to the following formula:



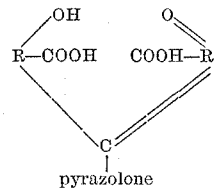
Other oxidizing agents such as nitric acid, nitro compounds, even concentrated or fuming sulfuric acid may be used. Methylene-di-ortho-cresotinic acid may be replaced by methylene-di-salicylic or methylene-di-2.4-dioxybenzoic acid, etc., or by mixed methylene-di-hydroxy acids. Instead of 3-methyl-1-phenyl-5-pyrazolone mentioned in the example other pyrazolones may be employed, *e. g.* 3-methyl-5-pyrazolone, 3-methyl-1-para-sulfophenyl-5-pyrazolone, 3-methyl-5-pyrazolone-1-beta-naphthyl-4.8-disulfonic acid, 3-carboxy-1-phenyl-5-pyrazolone, 3-carboxy-5-pyrazolone-1-phenyl-para-sulfonic acid, etc.

The dyeing can be done in the usual ways.

Wool is either dyed and treated with bichromates after dyeing, or wool mordanted with chromium compounds is dyed, or unmordanted wool is dyed and mordanted in one operation from a bath containing both dyestuff and chrome mordant.

I claim:—

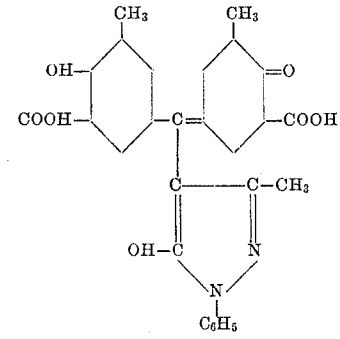
1. The herein described new dyestuffs, being condensation products of methylene-dioxycarboxylic acids and pyrazolones containing probably in their molecule the following characteristic group:



pyrazolone

in which R means an aryl radical which dyestuffs are dark powders soluble in dilute caustic soda lye generally with a red color, dyeing wool from acid baths generally from red to violet to brown shades, which can be chromed after dyeing, substantially as described.

2. The herein described new dyestuff having probably the following formula:



which is a yellowish-brown powder soluble in caustic soda lye with an orange-red color, dyeing wool orange shades, which turn intense brownish-orange on chroming, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

MAX WEILER. [L. S.]

Witnesses:

CHAS. J. WRIGHT,

WALTER VONNEGUT.