

UNITED STATES PATENT OFFICE.

ROBERT E. SCHMIDT, OF ELBERFELD, GERMANY, ASSIGNOR TO THE
FARBENFABRIKEN OF ELBERFELD COMPANY, OF NEW YORK.

PROCESS OF DYEING.

SPECIFICATION forming part of Letters Patent No. 649,486, dated May 15, 1900.

Application filed May 18, 1898. Serial No. 681,016. (No specimens.)

To all whom it may concern:

Be it known that I, ROBERT E. SCHMIDT, doctor of philosophy, chemist, residing at Elberfeld, Germany, (assignor to the FARBENFABRIKEN OF ELBERFELD COMPANY, of New York,) have invented a new and useful Improvement in Processes of Dyeing; and I hereby declare the following to be a clear and exact description of my invention.

- 10 It is known that several derivatives of anthraquinone are capable of dyeing unmordanted wool in acid-baths. Among these products certain amidoöxyanthraquinone sulfo acids—such as the mono and disulfonic
15 acids of paradiamidoanthrarufin and paradiamidochrysazin, paradiamidoanthrachrysondisulfo acid, or the like—are of special value on account of the fact that they yield on unmordanted wool from violet to blue shades.
20 On using these dyestuffs on a large scale for dyeing it has been found that they exhibit the disadvantage of not always yielding the same shades. For instance, if diamidoanthrachrysondisulfo acid is dyed in acid-baths
25 on unmordanted wool, sometimes blue and sometimes from reddish-blue to red shades are obtained. The other dyestuffs above mentioned show, though in a smaller degree, similar behavior. I have now found that on
30 dyeing with the above-mentioned amidoöxyanthraquinone sulfonic acids the production of such reddish shades can be avoided if small quantities of suitable reducing agents, such as sulfurous acid or salts of sulfurous acid—
35 such as sodium bisulfite, potassium bisulfite, or the like—are added to the dyeing-baths.

In carrying out my process practically I can proceed as follows: To a cold dyeing-bath prepared as usual from fifteen hundred liters
40 of water and two kilos, by weight, of diamidoanthrachrysondisulfo acid one kilo, by

weight, of sodium bisulfite and three kilos, by weight, of concentrated sulfuric acid (66° Baumé) are added with stirring. Subsequently one hundred kilos, by weight, of unmordanted woolen fabric are introduced into the bath and then dyed in the usual manner at about 100° centigrade. Thus such a pure and beautiful blue shade is obtained as cannot be produced or will be obtained only accidentally in case reducing agents are not added to the dyeing-bath.

If any other of the above-mentioned dyestuffs are employed in place of diamidoanthrachrysondisulfo acid used in the example, the production of reddish-blue shades is likewise avoided.

Having now described my invention and in what manner the same is to be performed, what I claim as new, and desire to secure by Letters Patent, is—

1. The process for dyeing unmordanted wool with water-soluble amidoöxyanthraquinone sulfonic acids, which process consists in dyeing these coloring-matters in a bath which is acid, and at the same time contains a sulfurous-acid compound as a reducing agent, substantially as described.

2. The process for dyeing unmordanted wool with water-soluble diamidoanthrachrysondisulfo acid, which process consists in dyeing this coloring-matter in a bath which is acid and at the same time contains a sulfurous-acid compound as a reducing agent, substantially as described.

In testimony whereof I have signed my name in the presence of two subscribing witnesses.

ROBERT E. SCHMIDT.

Witnesses:

R. E. JAHN,
OTTO KÖNIG.