

# UNITED STATES PATENT OFFICE.

ALEXANDRE N. DUBOIS, OF PHILADELPHIA, PENNSYLVANIA.

## DYEING ANILINE-BLACK.

SPECIFICATION forming part of Letters Patent No. 331,777, dated December 8, 1885.

Application filed January 22, 1884. Serial No. 118,275. (No specimens.)

*To all whom it may concern:*

Be it known that I, ALEXANDRE N. DUBOIS, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in the Process of Dyeing Aniline-Black, of which the following is a specification.

My invention relates to the dyeing of cotton, hemp, flax, jute, silk, and feathers through the medium of aniline, the object of my invention being to obtain an indelible blue-black by means of a simple and economic process.

I first prepare the material to be dyed by soaking in a cold bath of soluble castor oil, composed as follows, viz: I take of the weight of the material to be dyed about twelve hundred (1200) per cent. of water from 60° to 70° Fahrenheit, and in it dissolve six per cent. soluble castor-oil, two per cent. sulphuric acid at 66° Baumé, and four per cent. liquid ammonia, all of which is well stirred and moved, and the fabrics to be dyed are placed in it and moved around or worked for five minutes, then taken out, wrung or pressed well, and immediately put in the dyeing-bath, which is composed as follows, viz:

I take of the weight of the material to be dyed about one thousand per cent. water at 60° to 70° Fahrenheit, and in it dissolve ten per cent. aniline salts or oil, forty-five per cent. hydrochloric acid at 22° Baumé, ten per cent. nitrate of iron, and sixteen per cent. bichromate of potash. If oil of aniline be used, it must first be dissolved in the quantity of acid used for dyeing. The nitrate of iron I use is prepared by putting thirty pounds nitric acid in sixty pounds water at 150° to 160° Fahrenheit, and then allowing three pounds iron to dissolve therein for twenty-four hours, after which it is filtered and ready for use.

In the water for the bath I successively put half the requisite quantity of each of the above-named chemicals, commencing with the aniline, and stirring well each time. When this has been done, the fabrics to be dyed are then placed in it and moved around or worked for one hour, when they are taken out, two hun-

dred per cent. water at 60° to 70° Fahrenheit added, and the other half of the chemicals put in. I replace the fabrics in the bath, retaining a temperature of 60° to 70° Fahrenheit, moving round or working them for one hour more, when I gradually and in the course of half an hour raise the temperature to 200° Fahrenheit, which is retained for half an hour, at the expiration of which I withdraw the fabrics, allow them to cool, and then wash well with cold water until they cease to discharge color. This done, I finish in a soap bath, as follows, viz: In twelve hundred per cent. of water at 200° Fahrenheit I put thirty per cent. of good white soap already dissolved in boiling water, and therein put the fabric to be dyed, retaining a temperature of 180° to 190° Fahrenheit. I allow the fabric to remain in it twenty minutes, during which it is well worked or stirred. It is then taken out, well washed, and from ten to twelve hours thereafter dried on heated rollers if cloth, or in a drying-room at 160° to 170° Fahrenheit if yarns.

I do not limit myself to the above proportions, which may be varied to suit different fabrics.

I am aware that a compound of aniline color, oil or fat, acetic or hydrochloric acid, sulphuric ether, volatile alkali, and potash has been used for dyeing purposes, and that a patent therefor was granted to Armand and Berton, June 14, 1881, No. 242,855. I therefore do not claim such a combination; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

The process of dyeing aniline-black, consisting in first preparing the fabric to be dyed by soaking in a bath of soluble castor-oil, then soaking same for about three hours in a bath composed of water, aniline-oil, hydrochloric acid, nitrate of iron, and bichromate of potash, after which it is finished in a bath of soap, substantially as above set forth.

ALEXANDRE N. DUBOIS.

Witnesses:

JNO. FALLON,  
CHRISTOPHER FALLON.