UNITED STATES PATENT OFFICE.

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PROCESS OF DYEING ANILIN-BLACK.

SPECIFICATION forming part of Letters Patent No. 588,388, dated August 17, 1897.

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To all whom it may concern:

Be it known that I, VICTOR G. BLOEDE, a citizen of the United States, and a resident of Catonsville, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in the Production of Black and other Colors upon Fibers and Fabrics; and I hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Hitherto it has been customary to dye anilin-black and other colors based upon the oxidation of anilin and its homologues by first treating the fiber or fabric with a solution of anilin combined with oxidizing agents, the latter usually consisting of a chlorate, such as soda or potash, alone or in combination with a metallic salt or salts, such as the chlorid or nitrate of iron or copper, then exposing the goods impregnated with these compositions to the action of the air, or air and steam, until the chemical action takes place, converting the anilin compound into color by oxidation, after which the goods are further treated or developed by soaping, chroming, or other auxiliary treatment. My process is an improvement on this method in that the oxidation is secured in a very much more rapid and economical manner, and is based upon the fact that neutral chromates, chlorates, and other powerful oxidizers may be combined with anilin and analogous compounds without immediate decomposition taking place, and that this decomposition can then be brought about at will by causing any acid to react upon the composition that is capable of withdrawing the base to which the oxidizer is bound, thereby liberating the oxidizing principle and causing it to react upon the anilin or homologous coloring principles. To give an example of the action, slightly-acid chromate of potash or soda may be added to a solution of neutral or preferably slightly basic anilin chlorid in equivalent proportions without any immediate reaction taking place; but if to this composition a mineral acid be now added in sufficient quantity to withdraw or partly withdraw the alkaline base the oxidizer at once reacts upon the anilin compound, converting it into coloring-matter.

Having now stated the principle upon which my new process is based, I will describe the manner of its practical application.

I first prepare a solution of chlorid or other salt of anilin or analogous substance, consisting, for the production of black, of, say, twenty to twenty-five parts of the salt to seventy-five or eighty parts of water, all acidity of the solution being neutralized by adding some free anilin-oil. To this solution is now added slightly-acid chromate of soda or other oxidizer, such as chlorates of the alkalies or metallic chlorates or nitrates capable of acting as oxidizers, in equivalent proportions for the oxidation of the anilin or its homologues. The fiber after being padded in or otherwise impregnated with this solution and surplus having been removed by strong pressure or otherwise is then subjected to the fumes or vapor of a volatilized acid capable of displacing the oxidizing element from its combination. Owing to its ready volatility muriatic acid is preferable; but sulfuric acid, anhydrous sulfuric acid, nitric, and other acids may also be employed. The exposure to the acid fumes is best effected, according to my experience, by passing the impregnated goods over rollers through a chamber supplied with the acid vapor. Air or steam may also be used in conjunction with the acid fumes as a diluent or to hasten or modify the action. I do not, of course, confine myself to any special manner of effecting the contact of the goods with the acid vapor, as this can be accomplished in a number of ways.

As soon as the goods prepared as above described are brought in contact with the acid vapor the reaction sets in and is evidenced by the rapid darkening of the fiber, the process being completed when the shade becomes permanent and no longer deepens. The goods are then further treated as may be deemed necessary—that is to say, washed, soaped, &c.

I do not confine myself to the precise details herein mentioned, nor to the salts of anilin alone, nor to any special oxidizer or metallic salt, as a number of different compounds can be used with more or less satisfactory results in my process. Neither do I confine myself to the production of black alone, as by modifying the strength and char-

acter of the solutions used slate, drab, blue, brown, and other shades of color can be produced by my process; but

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

The process herein described for coloring fibers and fabrics consisting in impregnating the fibers or fabrics with anilin, its homologues or analogues or a salt of these combined with a suitable oxidizer; then subjecting the so-prepared fibers or fabrics to the fumes or vapors of a mineral acid capable of liberating the oxidizer, until the desired coloration has been effected.

VICTOR G. BLOEDE.

Witnesses:
CARL SCHON, Jr.,
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