UNITED STATES PATENT OFFICE.

VICTOR G. BLOEDE, OF CATONSVILLE, MARYLAND.

PROCESS OF VAPOR-DYEING.

SPECIFICATION forming part of Letters Patent No. 570,116, dated October 27, 1896.

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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 Anilin-Black upon Fibers or Fabrics; and I do 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.

Heretofore the production of anilin-black has been effected by impregnating the fiber with a mixture of anilin salt and a chlorate, preferably in conjunction with some metallic salt, as fully set forth in patent to Lightfoot, No. 38,589, then drying the fiber and developing the color by the process known as "aging," which consists in exposing the material so impregnated to the action of the atmosphere or air and steam conjointly until the first stage of oxidation has been reached, evinced by the formation of a dark-green or black color, the development of a full-black being subsequently effected by a secondary oxidation, consisting in the passage of the aged fiber through a solution of an alkali or other oxidizers. This method, still exclusively practiced at the present time, is a long, tedious, and expensive one, and the object of my invention is a simplification of the process by a direct production of the color in a much shorter time and less expensive manner, as well as with less damage to the fiber operated upon.

My new process is based upon the fact which I have discovered that when anilin, either as a base or as a volatile salt, is volatilized by the application of heat this vapor, when allowed to act upon fibers or fabrics impregnated with metallic salts or oxidizing agents, reacts upon these salts, and, being absorbed by the fiber very rapidly, produces a perfectly-fast coloration of the fiber varying from purple to deep black, according to the concentration of the mordant and vapors. I have found it perfectly feasible to produce a very fast black by this process.

Having now fully described the principle underlying my process, I will give an account of the manner in which I carry it out in practice.

I first prepare a solution of bichromate of soda or potash, chromic acid, chlorate of soda or potash, chlorate of copper, or any other oxidizer capable of developing a black or of oxidizing the anilin or its homologues. The strength and character of this solution depends largely upon the character of the color desired, but a solution of chromic acid varying in strength from five to ten per cent. may be given as a good example. Through a solution of this description, or any other oxidizer, as above stated, suitable for the purpose, the goods are now passed and the excess of material removed as rapidly as possible to prevent as much as possible the oxidation of the cellulose. The goods so impregnated are then passed into a chamber or otherwise subjected to the action of the vapor of anilin or its homologues. A rapid action follows, the fiber at once commencing to assume a dark hue as the anilin-vapor is absorbed and decomposed by the metallic salt. The completion of the operation is indicated when the fiber does not darken further. The goods are then washed, soaped, or further oxidized, if desired, and are then ready for the market. I have found that many of the homologues of anilin may be used for the production of different colors, and hence I do not confine myself to the use of anilin alone in working my process. I have also found it advantageous in some cases to provide for the presence of a free acid to counteract the alkalinity of the anilin or other vapors. This may be accomplished either by adding an excess of acid to the mordant or metallic salt used in the bottoming of the fibers or fabrics, or by injecting an acid-vapor conjointly with the anilin, or by using an acid salt of anilin for volatilization instead of the anilin base itself.

Having now fully described my invention, what I desire to claim and secure by Letters Patent is—

1. The process herein described for producing anilin-black on fibers or fabrics, which consists in first saturating the fiber with an oxidizing compound, then bringing the fibers

or fabrics in contact with the vapors of anilin or its homologues, until the desired depth of color is developed.

2. The process herein described for producing anilin-black on fibers or fabrics, which consists in first saturating the fiber with an oxidizing compound, then bringing the fibers or fabrics in contact with the vapor of a volatile acid salt of anilin or its homologues until the desired depth of color is developed.

VICTOR G. BLOEDE.

Witnesses:
GERTRUDE GIBSON,
CARL SCHON, Jr.