127,102

UNITED STATES PATENT OFFICE

ROBERT PINKNEY, OF LONDON, ENGLAND.

IMPROVEMENT IN THE MANUFACTURE OF DYES FROM ANILINE.

Specification forming part of Letters Patent No. 127,102, dated May 21, 1872.

SPECIFICATION.

I, ROBERT PINKNEY, of Bread-Street Hill, in the city of London, England, ink manufacturer, have invented "Improvements in the Production of Colors from Aniline in Dyeing and Printing," of which the following is a specification:

Hitherto, in order to produce the colors known as aniline blacks, it has been proposed to employ, in conjunction with salts of aniline and an oxidizing agent, certain metallic salts, such, for example, as copper, antimony, and iron, and more particularly salts of copper and of nickel. Now, this invention relates to the production of colors from aniline, and more particularly of that color known as aniline black; and consists in the employment for that purpose of salts of aniline in conjunction with a salt or compound of vanadium or uranium, or of mixtures of the same, in conjunction with a salt or compound of nickel as a substitute for salts or compounds of copper and of the other before-mentioned metals, together with the employment of an oxidizing agent, in order that, by this improved method, aniline black may be applied either for the purposes of dyeing, printing, writing, or marking goods or fabrics composed of either wool, silk, linen, or cotton, or mixtures of one or more of the same, or for the printing or for the marking or writing on paper.

When applying my invention for the purposes of dyeing I either employ a bath consisting of a solution of a salt of aniline, of a solution of a salt of vanadium or of uranium, or of mixtures of the same, either alone or in conjunction with a salt or compound of nickel—the chloride of nickel, for example—and of a solution of an oxidizing agent—such, for example, as chlorate of potash, or chlorate of soda, or chlorate of ammonia—in which the goods or fabrics are immersed; or I employ a preliminary bath consisting of a solution of the salts of vanadium or of uranium, or of mixtures of the same, either alone or in conjunction with a salt of nickel—the chloride, for example—and then immerse the goods or fabrics in a second bath containing a salt of aniline and a solution of the oxidizing agent—*videlicet*, chlorate of potash, or chlorate of soda, or chlorate of ammonia.

The proportions in which the several ingredients may be employed will vary according to the goods or fabrics to be dyed and the desired degree of color to be produced; but I have found the following proportions to give good results—namely, about one hundred and fifty parts, by weight, of a salt of aniline—such, for example, as the chloride of aniline; and about one-eighth part, by weight, of a salt or compound of vanadium; or about five parts, by weight, of a salt or compound of uranium; about twenty parts, by weight, of chloride of nickel, (but other proportions may be employed;) together with an oxidizing agent—such, for example, as the chlorate of potash, or the chlorate of soda, or the chlorate of ammonia, in the proportion of about one hundred parts, by weight, of chlorate of potash; or about one hundred and fifty parts of chlorate of soda, or of chlorate of ammonia, (or mixtures of the same may be employed,) together with about two thousand five hundred parts of water.

The operation of dyeing may be performed at the ordinary temperature; but an increased temperature may sometimes be advantageously adopted.

Instead of employing a bath containing the whole of the ingredients, as before mentioned, the constituents of the bath may be subdivided, the one bath consisting of the salts of aniline and the second of the salts or compounds of vanadium or of uranium, or of mixtures of the same, either alone or in conjunction with a salt or compound of nickel—the chloride of nickel, for example—and the oxidizing agents, as before described.

When applying my invention for the purposes of printing or marking I employ, in conjunction with the salt of aniline, by preference, the chloride of aniline, either the soluble salts of vanadium or of uranium, or mixtures of the same, in conjunction with a salt or compound of nickel—the chloride of nickel, for example; or I employ an insoluble salt of vanadium or of uranium, or mixtures of the same—such, for example, as the oxides or mixtures of the soluble and insoluble salts, in conjunction with a salt or compound of nickel—the chloride, for example; and I also employ, in addition thereto or in conjunction therewith, an oxidizing agent—such, for example, as chlorate of potash, or chlorate of soda, or chlorate of am-

monia—together with a thickening material—such as gum, starch, or dextrine.

For the purpose of printing I employ the materials in about the following proportions, (but these proportions will vary according to the nature of the goods to be printed and the intensity of the color it is desired to produce,)—*videlicet*, one hundred and fifty parts, by weight, of a salt of aniline—such, for example, as the chlorate of aniline; and about one-eighth part, by weight, of a salt or compound of vanadium; or about five parts, by weight, of a salt or compound of uranium; and about twenty parts, by weight, of a salt or compound of nickel—the chloride, for example—(but other proportions may be employed;) together with about one hundred parts, by weight, of chlorate of potash, or about one hundred and fifty of chlorate of soda, or one hundred and fifty parts of chlorate of ammonia, together with about one thousand two hundred parts of water, which, with gum, starch, dextrine, or other suitable thickening material, will give good results.

When applying my invention for the purpose of writing or marking, the printed, written, or marked goods or fabrics are to be submitted to an ageing or oxidizing process, and subsequently to the action of an alkaline or other bath, as is well understood by aniline-black printers and dyers.

The salt of aniline which I prefer to employ for the before-mentioned purposes is the chloride; but other salts or compounds of aniline may be substituted; and the salts or compounds of uranium and of vanadium which I prefer to employ are the nitrates, the chlorides, and the oxides of the same; but other salts or compounds of uranium and of vanadium may be substituted.

Although I have given such proportions of the several salts and compounds which I have found to give good results, I would have it understood that I do not confine myself to such proportions, as they may be varied without departing from this invention.

What I claim is—

The production of colors from aniline by the employment of salts or compounds of uranium and of vanadium, in conjunction with salts or compounds of nickel, together with a salt or compound of aniline and an oxidizing agent, in the manner hereinbefore described.

In witness whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT PINKNEY.

Witnesses:

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