

# UNITED STATES PATENT OFFICE.

ROBERT PINKNEY, OF LONDON, ENGLAND.

IMPROVEMENT IN THE PRODUCTION OF COLORS FOR DYES, INKS, &c., FROM ANILINE.

Specification forming part of Letters Patent No. 106,616, dated August 23, 1870.

*To all whom it may concern:*

Be it known that 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, 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.

Now, this invention relates to the production of colors from aniline—such as green and purple—and more particularly of that color known as "aniline-black;" and it consists in the employment for that purpose of salts of aniline 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 green, purple, or 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.

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 nickel, and of a solution of an oxidizing agent—such, for example, as chlorate of potash or chlorate of soda—in which the goods or fabrics are immersed, or I employ a preliminary bath consisting either of a solution of a salt of aniline, and then immerse the goods or fabrics in a second bath containing a solution of the oxidizing agent—viz., chlorate of potash or chlorate of soda—and of the salt of nickel, or the preliminary bath may consist of an oxidizing agent with a salt of nickel, and the after bath may consist of a salt of aniline, as before described. The dyed goods and fabrics, after being treated by either of the before-mentioned methods, are to be aged, and subsequently submitted to an acid or an alkaline bath, according to the color or shade which it is desired to produce. Thus, for instance, if it be desired to produce a green color or shade, I employ an acid bath—such, for example, as a solution of nitric acid. If it

be desired to produce a black or purple color, then an alkaline bath is employed, the strength of which baths will be dependent upon the color or tint it is desired to produce, as is well understood by aniline-black dyers.

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, viz: about three hundred and twenty parts, by weight, of a salt of aniline—such, for example, as the chloride of aniline, consisting of about one hundred and sixty parts, by weight, of aniline and about one hundred and sixty parts of hydrochloric acid; about twenty parts of a salt of nickel—such, for example, as the chloride of nickel—and an oxidizing agent—such, for example, as the chlorate of potash or the chlorate of soda—in the proportion of about twenty-five parts of chlorate of potash, or about sixty parts of chlorate of soda; or mixtures of the same may be employed, together with about six hundred and forty 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 salt or compound of nickel and the oxidizing agents, as before described.

When applying my invention for the purpose of printing or marking I employ, in conjunction with the salt of aniline, by preference, the chloride of aniline, either the soluble salts of nickel—the chloride of nickel, for example—or I employ an insoluble salt of nickel—such, for example, as the sulphide of nickel—or mixtures of the soluble and insoluble salts, and also employ, in addition thereto or in conjunction therewith, an oxidizing agent—such, for example, as chloride of potash or chloride of soda—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. These proportions will vary according to the nature of the goods to be printed and the in-



tensity of the color it is desired to produce; but I have found that about three hundred and twenty parts, by weight, of a salt of aniline—chloride of aniline—for example, consisting of about one hundred and sixty parts, by weight, of aniline, and one hundred and sixty parts, by weight, of hydrochloric acid, and about twenty parts, by weight, of a salt of nickel—the chloride, for example—about twenty-five parts of chlorate of potash or sixty of chlorate of soda and about six hundred and forty parts, by weight, of water and about two hundred parts of gum, starch, dextrine, or other thickening material will give good results.

When applying my invention for the purpose of writing or marking I employ the before-mentioned materials in about the same proportions as I employ for the purposes of printing.

The printed, written, or marked goods or fabrics are to be submitted to an aging or oxidizing process, according to the color required, and subsequently to the action of an alkaline bath when it is desired to produce a black or purple color, and to an acid bath when it is desired to produce a green color, as is well understood by aniline-black printers.

The salt of aniline which I prefer employing for the before mentioned purposes is the chloride, but other salts may be substituted; and the salts or compounds of nickel which I prefer to employ are the chloride and the sulphide, but other salts or compounds of nickel may be substituted.

Having now described and particularly ascertained the nature of the said invention and the manner in which the same is or may be used or carried into effect, I would observe, in conclusion, that what I consider novel, and therefore claim as my invention, is—

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

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

ROBERT PINKNEY.

Witnesses:

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