

UNITED STATES PATENT OFFICE.

WILLIAM T. WHITEHEAD, OF MAGOG, CANADA, ASSIGNOR OF ONE-HALF TO
HENRY D. DUPEE, OF BOSTON, MASSACHUSETTS.

ANILINE-BLACK RESIST.

SPECIFICATION forming part of Letters Patent No. 499,692, dated June 13, 1893.

Application filed February 21, 1893. Serial No. 463,251. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM T. WHITEHEAD, a subject of the Queen of Great Britain, residing at Magog, in the Province of Quebec, Dominion of Canada, have invented an Improvement in Aniline-Black Resists, of which the following is a specification.

My invention relates to the production of white or colored patterns in cloth by a resist on an aniline-black ground, and has for its object the method of producing cloth having white or colored patterns on an aniline-black ground, substantially as will be described.

Heretofore, in slop-padding or dyeing aniline-black goods and printing thereon a white or color discharge, great difficulty has been found in preventing too great an oxidation of the black, before the printing on of a pattern or figure, over oxidation making the production of a clear cut pattern or figure impossible. I have overcome this difficulty by first printing the cloth in a white or color resist, as hereinafter described, then slop-padding or dyeing the goods in the aniline-black liquor and suitably drying the cloth.

I wish to call particular attention to the fact that by my process I can successfully resist, on the printed parts of the cloth, the action of the aniline-black color in the operation of slop-padding or solid dyeing, which, so far as known to me, has heretofore been impossible.

In the practice of my invention I take the cotton or other cloth and print the pattern thereon in a resist suitably compounded, as will be hereinafter described, and if a white pattern is to be produced I form the resist mixture as follows:—six pounds, more or less, of metallic zinc in a finely divided condition, or a like quantity of a zinc compound, such as the oxide, hydrate or carbonate, one-half gallon of water, and one and one-half gallons of starch paste, (one pound starch per gallon.) The finely divided metallic zinc or the zinc compound is first thoroughly mixed with the water, and then the starch paste is added, the latter forming the thickening. The resist so compounded is then printed on the fabric to form the pattern and thereafter dried, all as is usual and well known. The printed fabric, in order that it may have an aniline-

black ground or body, is then either blotched, printed, slop-padded or dyed in the solution of aniline-black produced by any of the recipes well known to calico printers or dyers, dried in the usual manner, and thereafter the aniline-black is developed by passing the fabric through an aniline-aging machine, or by steaming, with or without pressure. The fabric may then be soaped, dried and finished in the usual manner. Upon the completion of the operation it will be found that the parts of the fabric covered by the resist mixture have not been at all affected by the aniline-black color, the zinc arresting the oxidation of the aniline and preventing its development in the parts printed or covered with the resist, and the pattern is clearly and distinctly defined in a manner impossible to achieve by any of the processes now known to me.

My invention is equally well adapted for the production of colored patterns, by mixing pigments or coal-tar colors, or extracts of dye-woods, with the resist, in about the proportions hereinafter set forth. If a pigment color is desired I take six pounds, more or less may be required, of finely divided metallic zinc, two quarts water, four quarts gum tragacanth solution (three ounces per gallon), and about six pounds of ultramarine blue, if that color is to be given to the pattern. The finely divided metallic zinc or the zinc compound is first thoroughly mixed with the water, and then the thickening solution and the color are added, the resist so made being printed on the cloth as described. Any other pigment may be used instead of ultramarine blue, the proportion varying according to the shade to be produced and to the nature of the pigment itself.

To produce the shade from a coal-tar color, as for instance safranine, I may take about six pounds of the finely divided metallic zinc, or of the zinc compound, one and one-eighth gallons of water, nine ounces safranine, and one and one-half pounds of starch, and thoroughly mix and boil. If other coal-tar colors are desired, Bismarck brown, methyl blue, malachite green, oxyphanine, chrysamine, methyl violet, or any of the coal-tar colors having the property when used in combination with me-

tallic zinc or with a zinc compound of fixing itself to the fabric, may be employed.

I have found in my experiments that most of the so-called basic colors will fix properly with metallic zinc, but some of the acid colors, such as soluble blue and violet and acid magenta fail to properly fix with the oxide and produce good results. If the color is to be produced from dye-wood or berry extract, I may take, for instance, about six pounds of the finely divided metallic zinc, or one of the zinc compounds, and thoroughly mix with one and one-half gallons of water. Then I take three pints Persian berry extract, 48° Twaddle, and add the proper amount of starch to produce a good impression on the cloth, and to this I add one pint chrome acetate, 32° Twaddle, and mix all well together, varying the quantity of Persian berry according to the shade desired. For other colors extract of log-wood, sapan, fustic, quercitron, bark, &c., can be used in place of the berry liquor, in varying proportions according to the shade desired. Usually where a color is added to the resist mixture, the color may be still further fastened by the addition of albumen to the mixture in such quantity and proportion as the nature of the particular case may make necessary or advisable.

In the course of my experiments I have found that with metallic zinc the best results are obtained by grinding the metallic zinc to an impalpable powder, and in compounding the resist it is preferable to mix the finely divided zinc with water before adding the other

ingredients. In another concurrently pending application, Serial No. 458,582, filed January 16, 1893, I have described and claimed specifically the use of a zinc compound to supply the zinc which is the essential or active element of the resist.

I do not wish to confine myself to the exact state or quantity of metallic zinc or of the zinc compound in the mixture, nor to the exact quantities of the other ingredients therein.

I claim—

1. In the herein described process of producing cloth having patterns on aniline-black grounds, printing the pattern upon the cloth in a resist containing zinc as its essential or active element, suitably drying the cloth, and thereafter treating the cloth with a solution of aniline-black by blotching, slop-padding, or dyeing, substantially as described.

2. In the herein described process for producing cloth having colored patterns on aniline-black grounds, printing the pattern upon the cloth in a resist containing zinc as its essential or active element, and a color, suitably drying the cloth, and thereafter treating the cloth with a solution of aniline-black by blotching, slop-padding or dyeing, substantially as described.

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

WILLIAM T. WHITEHEAD.

Witnesses:

JAS. DOLPHIN,
HUGH JAMIESON.