

UNITED STATES PATENT OFFICE.

JAMES HARLEY, OF LOWELL, MASSACHUSETTS.

IMPROVEMENT IN DYEING AND CALICO-PRINTING.

Specification forming part of Letters Patent No. **168,991**, dated October 19, 1875; application filed September 30, 1875.

To all whom it may concern:

Be it known that I, JAMES HARLEY, a resident of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Dyeing and Printing Textile Fabrics; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same.

The printing of what are known as madder colors, either with the various preparations of madder or with the artificial dye-stuffs, such as anthracene colors, which are applied in the same manner as madder preparations, is well known in calico-printing. In such goods portions are reserved as whites. It is very desirable to combine with the usual figures produced by means of mordants and madder colors, and their substitutes, other colors, such as aniline greens, so as to apply these greens simultaneously with mordants intended for passing through the dye-bath to be dyed up in black, red, orange, chocolate, brown, purple, and all the various madder colors.

Heretofore this has not been practicable. By my invention it is accomplished. The green is first fixed upon the cloth, so as to pass through the ordinary dunging and dye-bath, in combination with mordants intended for dyeing up the various madder and alizarine colors.

By the method pursued in fixing the green in my process it can be applied, and the goods passed through the dye-bath, without either affecting the other colors or being itself affected. In fact, the portions to which the green is applied pass through the dye-bath just as the white portions do in ordinary dyeing. Of course the green need not fill all the portions not covered by the madder-color mordants, but any part or figure may be reserved, as white is in the usual manner.

My invention, therefore, consists in applying to textile fabrics, especially those made of cotton, particular preparations of aniline green, such as methyl and iodine greens, simultaneously with mordants intended for passing through the dye-bath, to be dyed up in red, orange, purple, pink, chocolate, brown,

drab, black, or other color, tint, or shade obtained in madder styles.

The invention also consists of a new style of printed goods—namely, a print having in combination aniline green with one or more madder colors.

This combination of colors enables the calico-printer to produce very pleasing effects, especially in what are known as “robe styles.”

The following description will enable others to make and use my invention:

In the first place I pass my cloth through the following solution previous to printing: Gelatine standing at 2° Twaddell's hydrometer; silicate of soda at 1½° Twaddell; chlorate of potash standing 2° Twaddell. The cloth is then dried, and is ready for the printing-machine. I may here state that the three solutions above are mixed together, and the cloth passed through them at once.

To make my green color, I take four and a half (4½) gallons extract of sumac, standing 26° Twaddell; six pounds of starch. Boil ten minutes, and when half cold I add two and a half pounds tartaric acid, one pound oxalic acid, and one and a half pound methyl or iodine green. This is printed on the cloth already passed through the above solution, in combination with regular mordants. By this means I get an insoluble tannate of gelatine.

After the goods are dried and aged one night, I pass them through a solution of silicate of soda at 2° Twaddell, and heated to 180° Fahrenheit, or thereabout. The goods are then well washed and dyed to suit the pattern with different proportions of alizarine, garancine, sumac-bark, berries, and such other materials as ordinarily employed in this style of work, as well understood by competent dyers.

I do not limit myself to the exact materials or proportions given above, as an expert dyer and chemist may readily substitute equivalent materials for many of them.

The essential feature of my process consists in fixing upon the cloth at the same time, or before being placed in the dye-beck, the greens named, or their equivalents, so that they neither interfere with, nor are themselves injured by, the subsequent process of dyeing

and finishing the goods. This feature is also applicable to those indigo styles in which mordants are applied by the printing-machine.

I have named, in describing my invention, methyl and iodine greens, as these are the most commonly used of the aniline greens; but any other of the varieties of the aniline greens may be substituted, reference being had to the strength of the commercial articles substituted.

I am aware that indigo blues and indigo greens have been fixed in juxtaposition with ordinary madder mordants, and I do not claim this. The greens produced by my process pass through the bath just as the whites do ordinarily, and the dyeing and finishing take place just as if the portions containing the green had been white.

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

1. The improved process herein described

for dyeing in madder and indigo styles, in combination with aniline greens, consisting in first fixing the green upon the cloth with the mordants, and then passing the cloth through the dye-bath, whereby it is then dyed up in madder and indigo styles, substantially as specified.

2. The new fabric herein described, having an aniline green, substantially such as described, in combination with one or more madder or alizarine colors.

3. The combination of aniline greens upon fabrics with mordants suitable for dyeing, with garancine, alizarine, and similar dye-stuffs, substantially as set forth.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

JAMES HARLEY.

Witnesses:

ALBERT M. MOORE,
JOHN F. FRYE.