

United States Patent Office.

ALFRED PARAF, OF NEW YORK, N. Y., ASSIGNOR TO EDWARD S. RENWICK, TRUSTEE, OF SAME PLACE.

Letters Patent No. 110,277, dated December 20, 1870.

IMPROVEMENT IN THE MANUFACTURE OF COLORS AND THEIR APPLICATION TO FABRICS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ALFRED PARAF, of France, now residing in the city, county, and State of New York, have made an invention of certain new and useful Improvements in the Manufacture and Application of Colors in the Operations of Printing and Dyeing Fabrics.

This invention is based upon the discovery that the coloring matter of many vegetable substances can be liberated from the other vegetable matter with which it is united by the action of a class of mineral salts, and that by the action of said salts the coloring matter is put into a suitable condition for combining with the mordants by which it may be fixed to the fabric to be printed or dyed.

The class of mineral salts which are used in practicing this invention are denominated by me color-liberating salts, and they have the following characteristics, viz:

First, they are mineral salts, as contradistinguished from organic salts.

Second, they do not contain lime.

Third, they are alkaline or neutral, not acid.

Fourth, they do not produce a chemical compound with the coloring matter.

Fifth, the acid of the salt makes an insoluble combination with the base of the mordant that is used to fix the color in the fabric.

Sixth, they liberate the coloring matter from the other vegetable matter with which it is combined, and put it in a suitable condition to combine with the mordant.

The color-liberating salts which have thus far been used with success are the silicate of soda, the silicate of potash, the arsenite of soda, the arsenite of potash, the phosphate of soda, and the phosphate of potash.

The relative quantities of the vegetable coloring material and color-liberating salts that are used may be varied as found expedient; but, in order that the invention may be understood, I will proceed to describe the mode in which it has been successfully used in printing and dyeing madder colors.

For madder red, for printing cloth, boil together one part by weight of extract of madder; one part by weight of solution of silicate of soda at 40° Baumé; two parts by weight of water. Boil for ten minutes. Thicken the solution with three parts by weight of dextrine, and print in the usual manner with the print-color thus produced.

For madder chocolate, for printing, add to the solution for red, above stated, from one-tenth to four-tenths of one part by weight of red prussiate of potash, according to the shade required.

For madder violets, for printing, prepare a solution of color-liberating salts in the following proportions: One part by weight of silicate of soda at 40° Baumé; four parts by weight of water. Boil together. One part by weight of extract of madder; three parts by weight of the foregoing solution. Thicken the product with three parts by weight of dextrine, and add one-fourth of one part of red prussiate of potash, which is to be dissolved in boiling water before being mixed with the other ingredients.

The cloths for printing should be prepared in the usual manner with the mordant for madder colors; that is to say, they should be padded with a mixture of three parts by weight of a solution of acetate of alumina at 4° Baumé, and one part of a solution of acetate of lime at 4° Baumé. The padded cloth should be aged until nearly all the acetic acid has passed off, when it is ready for printing. After the cloth has been printed it should be steamed for forty-five minutes, as usual with cloths that have been printed with madder colors, and should then be washed and soaped in the usual manner practiced with such printed cloths.

The color-liberating salts which are preferred for preparing dye-liquor for madder colors are the phosphate of soda and the phosphate of potash. The dye-liquor may be prepared by boiling together garancine and the color-liberating salts in the following proportions, viz: For each pound of garancine use from two to four ounces of either of the above phosphates. The phosphate should be dissolved in boiling water and then introduced into the dye-vat. Prepare the cloth as it is usually prepared for dyeing by the use of garancine, being careful to refrain from adding any lime, and dye in the usual manner.

In practicing the invention care must be taken that the vegetable dye material which is to be treated with the color-liberating salts is either free from lime, or that such lime as it may contain is not in a condition to decompose the color-liberating salt that is to be used. The easiest way to insure this result is to treat the dye material with weak muriatic acid in sufficient quantity to render the mass slightly acid. Subsequent-washing of the dye material is then unnecessary.

In place of using an extract of madder for the manufacture of printing-colors, garancine may be used for the purpose; and in such case the garancine must either be left in the acid condition in which it exists before it has been washed, or it should be rendered slightly acid by sprinkling and mixing it with weak muriatic acid. When garancine is so used, two parts of it should be used in place of the one part of extract previously mentioned. The extract of madder

that is used in preparing print-colors may be either a natural extract or the artificial extract.

The invention is not restricted to madder colors, but may be practiced in manufacturing colors of other vegetable dye materials and printing with them. Among such substances may be enumerated wood, sandal-wood, curcuma, anatto, quercitron, and Persian berry. The mordants used when printing or dyeing colors derived from these materials should be the same as are generally used to fix the several colors in the fabric.

What is claimed as the invention to be secured by Letters Patent is—

1. The manufacture of colors, for printing and dyeing fibrous and textile articles, of coloring matter and a color-liberating salt, substantially as before set forth.

2. The process of applying colors to fibrous and textile articles by means of the coloring matter and a color-liberating salt, substantially as before set forth.

In testimony whereof I have hereto set my hand this 29th day of October, A. D. 1870.

ALFRED PARAF.

Witnesses:

A. W. ADAMS,
DANIEL PARK.