UNITED STATES PATENT OFFICE.

CARL WACHENDORFF, OF OESTRICH-ON-THE-RHINE, GERMANY.

MORDANT.

SPECIFICATION forming part of Letters Patent No. 421,847, dated February 18, 1890.

Application filed February 9, 1888. Serial No. 263,437. (No specimens.)

To all whom it may concern:

Be it known that I, CARL WACHENDORFF, a subject of the Emperor of Germany, residing at Oestrich-on-the-Rhine, Germany, have invented new and useful Improvements in the Means for Printing and Dyeing, of which the following is a specification.

According to my invention I employ chromium fluoride in the place of the chromium preparations now used in the dyeing and printing of fabrics—that is to say, in the place of chromium chloride, chromium sulphate, chromium rhodanates, copper chromate, chromium chlorate, the alkali chromates and bichromates; but in particular the chromium fluoride is intended to replace chromium acetate and chromium nitrate in printing fabrics, and chrome alum, potassim chromate, sodium chromate, potassium bichromate, and sodium bichromate and chromate acid in wool dyeing.

The process, when employing chromium fluoride, is otherwise the same as with the ordinary chromium mordant, for which the chromium fluoride is a substitute, and the proportions in which the said substitute is used are determined by the percentage of chromium oxide contained therein.

The process of dyeing wool and woolen material or stuffs with chromium fluoride as a fixing agent is as follows: A bath is prepared in which the necessary quantity of chromium fluoride is dissolved. The wool can be mordanted either cold or boiling, with or without the addition of cream of tartar or preparations of tartar, sulphuric acid or acetic acid. Thereupon the wool coated with chromium oxide is dyed out with dye-woods, madder, aniline, or alifarine colors, or with mixtures of colors. It is possible to finish the dyeing operation with the before-named colors by placing them in the same bath with the chromium fluoride.

The process of treating cotton and silks is similar. After the material has been impregnated with chromium fluoride the chromium oxide is fixed (steamed) by any suitable process and then the dying finished with any of the before-named colors.

The method of employing chromium fluoride in fabric printing is as follows: The fabric, either prepared or unprepared, is printed or covered with a mixture of fluoride of chromium, and the color either thickened or not—*e. g.*, alizarine blue, log-wood, Victoria blue, &c.—and fixed to the fabric as chromium lac. It is then steamed longer or shorter, as necessary, under high pressure or at an ordinary pressure. The fabric is then either washed or soaped. The fluoride of chromium can be added to the printing-color either dry or in solution, and when the fabric is covered and not printed an acid, alkali, or neutral solution of fluoride of chromium can be employed.

The advantage obtained by the use of chromium fluoride in dyeing and printing arises more particularly from the fact that chromium oxide is very easily separated from a solution thereof under treatment, and that consequently the chromium fluoride is particularly suited for conveying chromium oxide to animal and vegetable fibers. The chromium fluoride is therefore, in this respect, similar to chromium acetate. The hydrofluoric acid given off during the separation of the chromic oxide has no prejudicial effect upon the tint to be produced upon the fiber. Hydrofluoric acid may also be very cheaply produced, and consequently chromium fluoride can be used at a less cost than most of the chromium mordants now used.

What I claim as my invention, and desire to secure by Letters Patent, is—

The process of fixing colors in dyeing and printing fabrics and fibers, consisting in impregnating or saturating them with chromium chloride as a fixing agent, substantially as herein set forth.

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

CARL WACHENDORFF.

Witnesses:
FRANZ HASSLACHER,
FREDERICH QUEHL.