

# UNITED STATES PATENT - OFFICE.

ERNST ZILLESSEN, OF CREFELD, GERMANY.

## PROCESS OF DYEING.

SPECIFICATION forming part of Letters Patent No. 484,080, dated October 11, 1892.

Application filed July 18, 1891. Serial No. 399,971. (No specimens.)

*To all whom it may concern:*

Be it known that I, ERNST ZILLESSEN, a subject of the King of Prussia, residing at Crefeld, Prussia, Germany, have invented new and useful Improvements in Dyeing Silk or Half-Silk Fabrics in Pieces, of which the following is a specification.

My invention has reference to improvements in dyeing silk in the piece. Silk fabric (all silk) has heretofore been dyed in the piece only in one color, different colors being produced by weaving in with the ground previously dyed organzine, (thrown silk;) but it is not possible to dye raw silk (grege) before weaving, since the threads are very delicate and are readily dissolved by the hot soap bath into their cocoon-threads and lose the requisite strength and elasticity necessary for weaving. Half-silk goods, in which the woof usually consists of cotton, have been dyed in the piece, a color being imparted to the cotton contrasting from that of the silk by the use of different dyes.

My invention has for its object to enable silk fabric, especially fabric made from raw silk, (grege,) to be dyed in the piece in contrasting colors; and to this end it consists, essentially, in treating part of the silk to be woven with a mordant, then weaving the same in combination with silk not so prepared, and finally dyeing the fabric in the piece, whereby the previously-prepared silk assumes a different color from the not-prepared silk.

In carrying out my invention I take raw silk (grege) and treat the same with a metallic mordant—such, for instance, as iron mordant or other metallic oxides—and then with fats. The silk threads thus prepared, after being dried, are woven together with raw-silk threads not so prepared in the desired patterns for the contrasting colors. The prepared silk can in dyeing be given a different color from the not-prepared silk. For instance, if the fabric is treated with a solution of logwood the prepared threads are dyed black, while the not-prepared threads remain light in color.

In the manufacture of striped half-silk goods, as an example, the portion of the weft to form the light stripes is composed of un-

prepared threads of raw silk, while the portion forming the dark ground is composed of prepared raw silk, and the woof may consist of wool, preferably black.

For making a black ground the silk threads for composing the same are first impregnated with an iron mordant, then washed and dried. After weaving the fabric is treated in a hot soap solution and then dyed with a decoction of logwood. The prepared threads forming the ground are thereby dyed black, while the not-prepared threads are not influenced by the dye and remain white.

Any optional color may be given to the stripes by subsequently dyeing the same with aniline dye, the black ground remaining unaffected.

It is evident that threads of material other than silk may be woven into the fabric with the prepared silk to form the half-silk goods—for instance, wool or cotton which have been dyed in grain or are yet to be dyed—whereby multi-colored effects can be produced, the prepared silk in particular receiving the dark tinges. In general of course the tinges obtained will depend upon the mordant and the coloring-matter employed.

It is evident that besides raw silk (grege) commercial spun silk and organzine (thrown silk) may be similarly prepared and woven. Therefore I do not wish to restrict myself to raw silk in forming the fabric.

I claim—

The herein-described process for dyeing silk goods in contrasting colors, which consists in treating part of the silk threads to be woven with a mordant before weaving, then weaving the same together with the part not so treated to form the desired pattern in contrasting colors on the face of the fabric, and finally dyeing in the piece the fabric thus formed, substantially as described.

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

ERNST ZILLESSEN. [L. s.]

Witnesses:

GUST LOOSEN,  
WM. A. BLAKE.