

UNITED STATES PATENT OFFICE.

FREDERICK J. BIRD, OF STROUD, ENGLAND.

IMPROVEMENT IN MORDANTS.

Specification forming part of Letters Patent No. **177,987**, dated May 30, 1876; application filed March 17, 1876.

To all whom it may concern:

Be it known that I, FREDERICK JOSEPH BIRD, of Stroud, in the county of Gloucester, England, dyer, have invented an Improvement in Mordants for Dyeing Woolen and Cotton Goods, of which the following is a specification:

Difficulty has heretofore been experienced in dyeing woolen and cotton or other union goods in the piece, because the mordants employed for one fiber are not adapted to the other, and hence a second mordant has to be employed, greatly increasing the labor and often injuring the fabric.

My improved mordant is adapted to use with cotton or union goods, and is of a character to prepare the entire fibers for the subsequent dyeing operation, so that the use of two mordants is rendered unnecessary.

My invention relates to a mordant containing tannin or tannic acid and alum or cream of tartar as the principal ingredients, and I find it preferable to employ the same in the following manner:

About eighteen hundred-weight of gall-nuts; three hundred-weight of pure tannin or tannic acid; half a hundred-weight of alum or an equivalent, such as cream of tartar or tar-

taric acid; fourteen pounds of crystals of tin. An alkali, such as soda, by preference, is used to the extent of about half a hundred-weight, and adhesive material, such as starch, flour, or gum, to the extent of about three-quarters of a hundred-weight.

These substances are to be thoroughly ground together into a fine powder, and sifted through a fine sieve, and coarse particles reground, and the mass is mixed to produce entire uniformity.

This mordant is to be kept dry, and when used it is dissolved in hot water and applied in the ordinary manner to the fabric, or to the fiber before weaving.

I claim as my invention—

The composition herein described of gall-nuts, tannin, alum, tin, and soda, or ingredients possessing similar properties, substantially as set forth.

Signed by me this 30th day of December, A. D. 1875.

F. J. BIRD.

Witnesses:

JNO. R. HAVILAND,
Docks, Gloucester.

W. Z. VEALE,
Clerk at the U. S. Consulate, Gloucester.