UNITED STATES PATENT OFFICE.

WILLIAM H. SEAMAN, OF NEW YORK, N. Y.

IMPROVEMENT IN PROCESSES FOR TESTING THE PURITY OF DYE IN BLACK SILK THREAD OR FABRICS.

Specification forming part of Letters Patent No. **169,377**, dated November 2, 1875; application filed August 4, 1875.

To all whom it may concern:

Be it known that I, WILLIAM HENRY SEAMAN, of the city, county, and State of New York, have invented a new and useful Composition and Process for Testing the Purity of Dye in Black Silk Thread and Black Silk Fabrics; and I do hereby declare the following to be a full and correct description of the same.

My invention consists of a process for treating black silk thread and black silk fabrics, by immersion in a chemical liquid of which oxalic acid is the base, for the purpose of ascertaining whether the dye used in giving the thread or fabric its black color has been weighted with foreign matter, and, if so, to what degree.

In dyeing silk thread or silk fabrics black the pure dyes ordinarily used are of about the same weight, and add from half an ounce to an ounce to the weight of twelve ounces of pure silk—that is, silk from which all gum or other foreign matter has been removed previous to dyeing. The silks, thus colored with these dyes, are termed thirteen-ounced dyed silks, and are esteemed the best and purest in the market, because they contain the most silk and the least dye that can be combined.

Instead of the pure dye some manufacturers use one that has been loaded, or weighted, as it is termed, with some foreign substance, and thus produce silks that are termed fourteen, fifteen, sixteen, twenty, &c., ounced dyed—that is, a silk that for every twelve ounces of pure silk has from two ounces and upward of dyeing material in it, and is said to be weighted or loaded.

In the manufacture of black silk thread and fabrics it is usual to dye with a coloring matter of greater or less specific gravity, the purity of the dye not being discernible in the manufactured article by inspection or feel; hence, in many cases, the price of pure silk is paid for a greater or less proportion of an adulteration added to the dyes for the sole purpose of increasing the weight of the manufactured product, and thus defrauding the purchaser.

To detect and fix the relative degree of purity of dye, whereby the relative value of black silk thread and black silk fabrics can be ascertained, is the object of my invention, which I attain by means of the following-described composition and process:

I take crystallized oxalic acid and dissolve it in water, making a saturated solution. To this may be added a small quantity of muriatic acid and gum-camphor, which latter will be cut or dissolved by the acid solution. The use of muriatic acid and camphor in the solution is not absolutely essential to the attainment of the desired result; but I prefer to introduce them, as I have found that the result is obtained in the best manner by their employment.

The test-liquid being prepared, I take a fixed quantity of it—say half an ounce—and immerse in it a definite weight—say ten grains—of the silk to be tested, each sample being tested in a separate test-glass. The result will be found to be as follows: Where the dye employed has been of the greatest purity—say thirteen-ounce dye—it will be entirely discharged from the silk, and the test-liquid will be colored a clear carmine. From silk of less purity of dye the color will be less perfectly extracted, and the test-liquid will incline to an orange hue. Where the dye has been very gross—say twenty-ounce—the silk will remain unchanged in color under the test, and the liquid will be yellowish and turbid.

With these general indications for a guide an operator will soon become, by practice, expert in detecting the amount of impurity present in the dye.

What I claim is—

The process of treating black silk thread and fabric by immersion in a chemical liquid of which oxalic acid is the base, as herein described, for the purpose of ascertaining the purity of the dye, as set forth.

The above specification of my said invention signed and witnessed, at Washington, this 4th day of August, A. D. 1875.

WM. HENRY SEAMAN.

Witnesses:

ALONZO HUGHES,

CHAS. F. STANSBURY.