UNITED STATES PATENT OFFICE.

JULIUS RAU, OF STUTTGART, GERMANY.

IMPROVEMENT IN PROCESSES FOR DYEING SILKS.

Specification forming part of Letters Patent No. **186,620**, dated January 23, 1877; application filed August 4, 1876.

To all whom it may concern:

Be it known that I, JULIUS RAU, of Stuttgart, in the Kingdom of Wurtemberg and Empire of Germany, have invented a new Process for Dyeing Silks and Half-Silks without the use of water or steam, which process is fully set forth in the following specification:

Letters Patent for this invention were issued to me in Wurtemberg on December 15, 1875.

Heretofore by the use of water or steam silk could not be dyed in the web without losing its luster, while with my process I can dye or re-dye silks in the web giving to it the same fine appearance as when dyed in the yarn.

My process consists in soaking the material in a bath of benzine or other gaseous liquid produced by distillation from coal-tar or petroleum, with aniline dissolved therein and afterward soaking in a bath of pure benzine.

In carrying out my invention I first prepare the aniline with tourant oil, so as to make it soluble in benzine. This I accomplish by dissolving the aniline in tourant oil at a temperature of 60° Reaumur. (Tourant oil is the product of oil made from the unripe olive, and which is afterward exposed to a slow fermentation.)

Said solution is dried by heated air for better preservation, to be dissolved in benzine in quantities, as required.

A vat, to be hermetically closed, the inner surface of which is covered with enamel, is arranged inside for two removable cylindrical rollers, also coated with enamel. Upon these rollers the silk is wound and unwound during the dyeing process. The vat is filled or partly filled with a bath of benzine heated to 38° Reaumur, to which is added the necessary amount of my prepared soluble aniline of the required color.

After the silk has been treated in this bath for about fifteen minutes the solution is drawn off and pure benzine is filled in the vat, which will wash off the surplus color and other oily substances sticking to the silk. Now, the silks with the rollers are taken out of the vat and are placed in a centrifugal drying-machine, where the benzine is thrown off and collected for future use, after which operation the silk is placed in a drying-room heated to 50° Reaumur, where it will lose the benzine flavor, and whence it is ready for the market.

Although in my process I give preference to tourant oil for making aniline soluble in benzine, and to benzine as a bath, I do not wish to be limited to their use, as oleic acid instead of tourant oil, and other gaseous liquids besides benzine produced by distillation from coal-tar or petroleum—as, for example, benzole, naphtha, or gasoline—might be employed to advantage.

I do not claim the broad invention of using a bath of benzine or other hydrocarbon in the dyeing of silk, for such has been employed before, and I hereby disclaim, as making any part of my invention, the process described in patent to J. B. C. H. Petitdidier, May 18, 1875; but

What I claim as my invention is—

The process of dyeing silks and half-silks without the use of water or steam, consisting in first soaking the same in a bath of benzine with aniline dissolved therein, and afterward soaking the material in a bath of pure benzine, substantially as described.

JULIUS RAU.

Witnesses:

WM. H. LOTZ,

EMIL H. FROMMANN.