

UNITED STATES PATENT OFFICE.

GIUSEPPE GIANOLI, OF MILAN, ITALY.

PROCESS OF CHARGING SILK.

No. 819,751.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed January 4, 1905. Serial No. 239,654.

To all whom it may concern:

Be it known that I, GIUSEPPE GIANOLI, a subject of the King of Italy, residing at Milan, in the Kingdom of Italy, have invented certain new and useful Improvements in Processes for Dyeing or Charging Silks with Tin Compounds, of which the following is a specification.

It is well known and has even been the cause of complaint that silks charged with salts of tin—which is the material usually employed for this purpose—are subject to such alteration in their physical and mechanical properties that after a very short space of time they will tear even upon a slight pull. More especially is this the case when such silks are exposed to light. The importance of this loss of resistive power has been demonstrated by the researches made in the laboratory of the "Società Anonima Coöperativa per la stagionatura e l'assaggio delle Sete ed affini" in connection with silk (see *Annuaire of the Società Chimica of Milan*, sitting of the December 4, 1897) and by the researches of Professor Gnehm and Dr. Bänziger. (See *Färber Zeitung* of 1897.) As it was the intention to study the causes of these alterations produced in silk charged with the above-mentioned compounds, various forms of tin combinations were tested, and it is found that by using sulfo-cyanic acid and its salts and derivatives the silk fiber retains its dynamometric qualities almost unchanged.

The application of the sulfo-cyanic acid and of its salts is effected during the operations of charging, dyeing, or clearing by means of a diluted solution, (varying from 0,5 to three per cent. and more.) Having exposed to

the action of light for ten days some small skeins of silk (organzin) charged with thirty per cent. in excess of its original weight, a portion of which had been subjected after dyeing to clearing by the aid of one per cent. of sulfo-cyanate of ammonia rendered acid by means of sulfuric acid, while the other portion had been cleared or brightened by the ordinary method in an acid bath by means of 1:1,000 (one per thousand) of sulfuric acid, the following results were obtained:

	Tenacity.	Elasticity.
	Grams.	Millimeters.
Skein charged without the addition of sulfo-cyanate.	43,32	57
Skein charged with the addition of sulfo-cyanate.	63,88	135

It will be understood that either the sulfo-cyanic acid, its salts, or its derivatives may be used.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

In the process of mordanting or dyeing silk, acting on the silk with an alkaline sulfo-cyanid and an acid in solution of approximately one to three per cent., substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

GIUSEPPE GIANOLI.

Witnesses:

GOFFREDO RICCI,
MICHELEO DIAGO.