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MANUFACTURE OF ARTIFICIAL SILK

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8 Claims. (Cl. 28—1)

This application is a division of my applica-
tion Serial Number 233,747, filed November 16,
1927.

This invention relates to artificial silk fila-
ments having a dull lustre and to a method for
making said filaments.

It has already been proposed for the manu-
facture of artificial silk of dull lustre, subse-
quently to impregnate the artificial silk struc-
ture, which has been prepared in the usual way,
with metal salts, for example barium sulphate,
which are difficultly soluble or insoluble in water,
in such a manner that the artificial silk is treated
successively with aqueous solutions of chemical
compounds which by a double chemical reaction
yield difficultly soluble or insoluble compounds.
The artificial silk of dull lustre obtained in this
way has, however, the disadvantage of an in-
creased specific weight and at the same time
diminished pliability and elasticity.

It has been found that artificial silk filaments
having a rich dull lustre, which resembles or is
identical with the lustre of natural silk, can be
produced by incorporating with the artificial silk
filaments difficultly volatile substances, if desired
a plurality of such substances in a fine state
of subdivision, for instance in such a manner
that these substances are distributed in an emul-
sion-like, or colloidal form in the spinning solu-
tions, and these are then worked up according
to the usual methods to form filaments. Under
difficultly volatile substances are also to be un-
derstood substances which are practically non-
volatile or generally considered as non-volatile.
Such substances may be for example mineral,
vegetable or animal oils, fats or waxes, fatty
acids, aniline, tetraline, nitro-benzene and the
like, and the spinning solutions may be for in-
stance viscose, ammoniacal copper oxide, nitro-
cellulose or cellulose acetate solutions. The sub-
stances to be incorporated should be so chosen
for the different spinning solutions that they
do not dissolve molecularly in the spinning solu-
tions, but are merely distributed in the same
after the manner of an emulsion or colloid. Solid
substances such as for example thorium oxide,
magnesium soaps, calcium naphthenate and the
like, which are insoluble or difficultly soluble
in the spinning solutions may however also be in-
corporated in a finely suspended or colloidal form
with the spinning solutions.

The fine distribution of the added substances
in the spinning solution can be obtained for ex-
ample by preparing these substances beforehand
in a very fine state of subdivision or in the form

of colloidal solutions and thereupon mixing them
with the spinning solutions; however it may also
be obtained by purely mechanical means directly
in the spinning solutions themselves, for instance
by using mixing apparatus, or distributing appa-
ratus. The incorporated substances should prefer-
ably be distributed in such manner that, the
smaller the diameter of the artificial silk fila-
ment to be spun, the finer are the distributed
particles. For the usual kinds of artificial silk,
particles of the size of 0.001 to 0.005 mm. are
satisfactory. When distributing apparatus hav-
ing a more intensive action, for instance homo-
genizing apparatus or emulsifying apparatus are
used, it is possible if desired to obtain an even
finer distribution of the substances to be incor-
porated, if necessary up to colloidal dimensions.
Mixtures of difficultly volatile with volatile sub-
stances, for example paraffin oil and benzene,
are also suitable for the present process.

The substances may also be incorporated dur-
ing the process for the production of the spinning
solutions, that is to say the substances need not
only be distributed in the finished spinning solu-
tions, but they can be successfully distributed be-
forehand, for instance at the same time as the
cellulose compounds are dissolved in their
solvents.

The incorporated substances are present in the
finished artificial silk structures in the form of
microscopic or sub-microscopic drops or granules
and give the artificial silk structure a lustre simi-
lar to that of natural silk and the textiles made
therefrom are extremely pliable and elastic.

According to one mode of carrying out the
invention the method adopted is such that the
incorporated substances are subsequently partly
removed again, by which means it is possible
at the same time to obtain the so-called hollow
filaments. This partial elimination can be ob-
tained for instance by treatment with suitable
solvents for example, organic solvents. It can
also be effected for example by removing a part
of the incorporated substances as by heating, if
desired, in a vacuum. By this method it is also
possible partially to remove more difficultly vola-
tile substances from the filaments again. These
artificial silk structures also have a lustre similar
to that of natural silk and are characterized by
a pleasant soft feel.

Examples

1. 1000 g. viscose, in which 5 g. paraffin oil or
linseed oil or mixture of paraffin oil or linseed
oil and small amounts of benzene have been fine-

ly distributed by means of a butter churn, is spun in a known manner in precipitating baths, which contain sulphuric acid and sodium sulphate, and the resulting artificial silk filaments
5 washed and dried in the usual way. An artificial silk filament is obtained, which contains tiny drops of oil, distributed very finely and evenly therein, this filament having a rich dull lustre.
10 2. 150 g. of sodium cellulose prepared and ripened in the usual manner are treated in a known way with 18-26 g. carbon disulphide, 3 g. aniline or paraffin oil then added and after thorough mixing in a kneading apparatus in a
15 known manner dissolved in soda lye, so that a viscose is obtained containing 7-8% caustic soda and 7-8% cellulose. This spinning solution is spun into filaments as in Example 1, which filaments are then washed, dried and thereupon
20 treated with benzene while being heated, until about $\frac{1}{2}$ of the incorporated aniline or paraffin oil is extracted from the artificial silk filaments. After evaporating the benzene, artificial silk filaments having dull lustre are obtained which are
25 particularly soft and pliable.

Having described the invention as required by the patent statutes, what I claim is:

1. An artificial silk filament having a lustre resembling that of natural silk and containing
30 finely divided, dispersed undissolved particles of a material of the class consisting of alkaline earth soaps and calcium naphthenate, said filament having void spaces therein.

2. An artificial silk filament having a lustre resembling that of natural silk and containing finely divided, dispersed undissolved particles of alkaline earth soaps, said filament having void
5 spaces therein.

3. An artificial silk filament having a lustre resembling that of natural silk and containing finely divided, dispersed undissolved particles of magnesium soaps, said filament having void
10 spaces therein.

4. An artificial silk filament having a lustre resembling that of natural silk and containing finely divided, dispersed undissolved particles of calcium naphthenate, said filament having void
15 spaces therein.

5. An artificial silk filament having a lustre resembling that of natural silk and containing finely divided, dispersed undissolved particles of a material of the class consisting of alkaline
20 earth soaps and calcium naphthenate.

6. An artificial silk filament having a lustre resembling that of natural silk and containing finely divided, dispersed undissolved particles of alkaline earth soaps.

7. An artificial silk filament having a lustre
25 resembling that of natural silk and containing finely divided, dispersed undissolved particles of magnesium soaps.

8. An artificial silk filament having a lustre
30 resembling that of natural silk and containing finely divided, dispersed undissolved particles of calcium naphthenate.

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