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PROCESS FOR PRODUCING ARTIFICIAL
SILK IN THE FORM OF SPUN CAKES

Franz Hoelkeskamp, Wuppertal-Wichlinghausen,
Germany, assignor to American Bemberg Cor-
poration, New York, N. Y., a corporation of
Delaware

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In the spinning of artificial silk hitherto spin-
ning pots were used which usually had an inter-
nal diameter of 15-20 cm. and rotated at about
6,000 revolutions. These spinning pots were
found to be thoroughly reliable in the production
of artificial silk of the usual titre if attention
was paid to their careful mounting which en-
sured smooth running and satisfactory spin-
ning at the requisite high rotational speed.

However, if finer titres are spun, for example
according to the cuprammonium stretch-spin-
ning process, it is found that the winding up
into spun cakes cannot any longer be effected
free from trouble in the case of yarn of 60 deniers
and less. The filaments are drawn into the spin-
ning pot badly or not at all. These disadvan-
tages would be avoided by raising the speed of
revolution, but bearing in mind security in
mounting, this is not possible. However, even
in the case of the usual titres, a diminution in
the rotational speed is of advantage from the
point of view of simpler mounting.

The subject of this invention is a process for
collecting artificial silk in the usual spinning
pots. The process consists in weighting the fine
filaments in a suitable manner before introduc-
tion into the spinning pot. Even in the case of
extreme fineness, such weighted filaments are
drawn smoothly into the spinning pot and are
wound to a perfectly satisfactory cake.

The weighting is best effected by producing
a precipitate on the fibre, the freshly-spun fila-
ment being treated with solutions of substances
which react with the substances derived from
the precipitating bath to form an insoluble com-
pound. Those compounds which can interact to
form comparatively heavy compounds are par-
ticularly suitable. Thus, in the case of filaments
of cuprammonium silk, salts of heavy metals
which, under the influence of the ammonia and
copper still contained in the filament, react to
form insoluble basic salts or to form hydroxides
are particularly suitable. In the case of viscose
filaments, which leave the spinning bath charged
with sulphuric acid or sulphate solutions, an
after-treatment with soluble lead salts is par-
ticularly advantageous.

The present process also enables satisfactory
spun cakes to be made in spinning pots of much
diminished rotational speed when spinning arti-
ficial silk filaments of the usual titre. The speed
of rotation is smaller so that the spinning pot is
considerably protected. Also the power required
is strongly diminished and the mounting is fa-

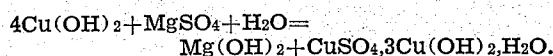
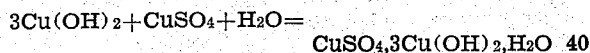
cilitated, since the accuracy of the mounting
need not be so high in the case of lower rota-
tional speeds, for the forces acting on the bear-
ings producing uneven running increase consid-
erably with rising rotational speed.

After spinning, the precipitates are dissolved
during the after-treatment by suitable agents,
such as acids, and removed from the filaments
by washing. In the processes heretofore known
after-treatment with acid or the like was also
necessary, so that the process according to this
invention is no more bothersome.

The process will now be described in greater
detail by reference to some examples.

The individual filaments of cuprammonium
oxide issuing from the nozzle into a spinning ves-
sel with flowing water as precipitating liquor
are precipitated and leave the spinning vessel
with a considerable copper hydroxide content.
Metal salt solutions are then supplied dropwise
to the filament, while being conducted over
rollers, before it enters the centrifuge. The
metal salt, e. g. 6 g. of commercial CuSO_4 to 1
litre of water, or 7 g. of commercial MgSO_4 to 1
litre of water, interacts with the substances still
remaining behind from the precipitation the
products whereof are insoluble salts which pre-
cipitate on the filament and are only dissolved
out again in the spinning pot, into the top of
which acid is introduced.

For forming the precipitate those quantities of
salt solutions are preferably used which are nec-
essary for interacting with every trace of the
substances present in the filament. The metal
salt solutions used react with the copper hy-
droxide present in the filament according to the
following equations:



The process, however, is limited neither to the
cuprammonium oxide process nor to the salt
solutions mentioned by way of example; on the
contrary, other processes and other salt solutions
may also be employed. It is only necessary to
choose those solutions which react with the sub-
stances on the filament and precipitate insoluble
substances on the latter, thereby weighting the
filament, which insoluble substances are removed
only subsequently, after they have performed
their task.

What I claim is:

1. In the production of artificial silk the steps of forming a thread of at most 60 deniers weighting said thread by water insoluble metallic compounds, collecting said thread in the form of a cake by a rotating spinning centrifuge and removing said insoluble metallic compounds by suitable means.
2. In the manufacture of cuprammonium silk the steps of forming a thread of at most 60 deniers, producing a precipitate of water insoluble metallic salts on said thread, collecting the thread in the form of a cake by a rotating spinning centrifuge, and dissolving the insoluble salts from the thread by suitable acid solutions.
3. In the preparation of artificial silk of fine denier, the step of weighting preformed filaments with a water-insoluble, acid-soluble heavy material, collecting the weighted filaments in a centrifuge and applying acid to the cake formed in the centrifuge.
4. In the preparation of artificial silk of fine denier by the cuprammonium process, the steps of treating the spun filaments with a material which will react with the precipitating solution to precipitate a heavy water insoluble compound upon the filaments, collecting the filaments in a centrifuge and thereafter treating them in a solution which will dissolve the insoluble compound.
5. In the preparation of artificial silk of fine

denier by the cuprammonium process, the steps of treating the spun filaments immediately after leaving the spinning bath with a solution of a salt of one of the metals of the group consisting of copper and magnesium to precipitate an insoluble salt of the metal upon the filament, collecting the filaments by centrifugal force and washing them with an acid solution.

6. In the preparation of artificial filaments of fine denier, the steps comprising precipitating a water insoluble metallic salt upon the formed filaments, collecting the filaments in a spinning cake by centrifugal force and thereafter removing the water insoluble compound.

7. In the preparation of artificial filaments of fine denier, the steps comprising extruding the filaments into a precipitating bath, treating the formed filaments with a compound which reacts with the portion of the precipitating bath retained by the filaments to deposit a water insoluble metallic compound thereon and thereafter collecting the filaments by centrifugal force and removing the insoluble compound.

8. In the production of artificial filaments of fine denier, the steps comprising weighting said filaments with a water insoluble compound, collecting the filaments in the form of a cake by a rotating centrifuge and removing said insoluble compound by suitable means.

FRANZ HOELKESKAMP.