

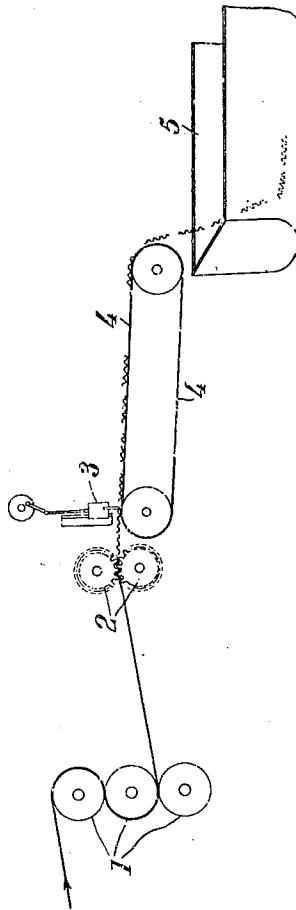
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W. ZETZSCHE ET AL

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MANUFACTURE OF THREADS FROM VISCOSE

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Walther Zetzsche
Erich Graumann
Inventors

By Their Attorneys

Meitz and Joslin

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MANUFACTURE OF THREADS FROM
VISCOSE

Walther Zetzsche and Erich Graumann, Prem-
nitz, Germany, assignors to I. G. Farbenin-
dustrie Aktiengesellschaft, Frankfurt-on-the-
Main, Germany

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5 Claims. (Cl. 18—54)

Our present invention relates to the manufac-
ture of threads from viscose.

One of its objects is a process of producing
threads from viscose cut into staples and having
an improved curliness as compared with those
hitherto known. Further objects will be seen
from the detailed specification following here-
after.

A known process of imparting curliness to
freshly spun threads of cellulose hydrate or cellu-
lose ester consists in passing them between fluted
rollers or by subjecting them to some other
mechanical operation. When this known process
is applied in the manufacture of viscose threads
the operation must be applied to the fibers in a
bath suitable for decomposing the viscose to pro-
duce cellulose hydrate or after the use of such a
bath. It has been found that as the activity of
the bath diminishes or as the kind of viscose
used varies, and according to the point of time
at which the rollers or like devices act upon the
threads, different results are obtained; the kind
and the strength of the curliness produced in the
thread by the process are more or less accidental
and not in accordance with any rule.

This invention relates to a process of this kind
which can yield very constant results if the
operation of precipitating the viscose is divided
into two sections, namely a coagulation of the
cellulose xanthate and decomposition of the
latter into cellulose hydrate, and the mechanical
operation for imparting curliness is applied to the
fiber after the coagulation of the cellulose
xanthate and before the decomposition into cel-
lulose hydrate.

Thus the threads issuing from the nozzle are
first treated with a bath which has only a pre-
cipitating action without decomposing the cellu-
lose xanthate. Such a bath may contain, for
example, as the precipitating agent, an organic
acid, ammonium sulfate or sodium sulfate or a
mixture of these salts, without acid or in the
presence of a very small proportion of acid.
After the threads have issued from the coagula-
tion bath they are subjected to the action of the
known devices for creasing and crimping the
threads while they are travelling. For example,
the threads may be crimped between fluted roll-
ers or between a fluted roller and a yielding bed.
Only after the threads have left the crimping
device are they subjected to decomposition to
cellulose hydrate. This decomposition can be
brought about in known manner by chemical
agents, for example by the known spinning bath
or by a solution of a mineral acid or by a phys-

ical operation, for example by heating to a high
temperature, which is not in itself an agent for
decomposing cellulose xanthate.

Reference is made to the accompanying draw-
ing which is a sectional view of the apparatus
used in our process. After the threads have
issued from the coagulating bath, they are led
over a series of rollers 1, then are crimped be-
tween fluted rollers 2. Then the threads are cut
into staples by a cutting machine 3 and are
passed from there over an endless band 4 into a
decomposition trough 5.

By this process there is produced, under all
conditions, a satisfactory crimped or curled
thread, which is very uniform and has a very
good staple, as a substitute for wool. The staple
cutting machine, preferably follows directly on
the crimping device and is followed by the de-
composing bath. In this case the xanthate
threads are passed through the crimping device
to the cutting machine. The cellulose hydrate
threads are finally decomposed, preferably in a
trough in which they float, or by being sprinkled
on an endless permeable band which follows the
cutting machine. Since the fibers are free to
shrink in cut condition the curliness is improved
by decomposing the xanthate in the staple form,
particularly as this decomposition is produced by
the high temperature of the liquid bath and not
by the chemical composition of the bath.

However, the bath for decomposing the xan-
thate threads need not necessarily be brought
into action on the cut sliver, in which case the
cutting machine may follow the decomposing
bath.

The viscose from ripened alkali cellulose, with
a content of 7 to 8 percent of cellulose and 5.5
to 7 per cent of alkali, is spun, preferably at a
ripeness corresponding with a salt number of 5
to 7, through metal nozzles having 600 to 1200
perforations of suitable diameter, for example
0.08 mm., into a coagulation bath comprising 15
to 25 per cent of ammonium sulfate and 5 to 10
per cent of sodium sulfate and at a tempera-
ture between 10° and 90° C. The xanthate
threads, which may be guided over stretching
rods, rollers, eyes or like stretching devices, are
then taken by draft rollers and led to the fluted
rollers. These latter, after they have imparted
the curliness, bring the material to the cutting
machine, for instance that described in U. S.
Patent No. 1,909,235. Then the xanthate
threads are decomposed as described in the co-
pending application Ser. No. 52,201 filed by

Zetzsche and Faber Nov. 29, 1935, in a glycol bath at a temperature of above 100° C.

What we claim is:

1. A process of producing curled staple fibers
5 from viscose which comprises spinning viscose into a precipitating bath in which the viscose is decomposed only to cellulose xanthate, subjecting the xanthate threads to a mechanical curling operation, decomposing the xanthate threads
10 to threads of cellulose hydrate and cutting the threads to staples.
2. A process of producing curled staple fibers from viscose which comprises spinning viscose into a precipitating bath in which the viscose is
15 decomposed only to cellulose xanthate, subjecting the xanthate threads to a treatment on fluted rollers, decomposing the xanthate threads to threads of cellulose hydrate and cutting the threads to staples.
- 20 3. A process of producing curled staple fibers from viscose which comprises spinning viscose made from ripened alkali cellulose and containing 7 to 8 per cent of cellulose and 5 to 7 per cent of alkali through nozzles being provided with 600 to 1200 holes having a diameter of 0.08

mm. into a precipitating bath containing 25 per cent of ammonium sulfate and 5 to 10 per cent of sodium sulfate at a temperature of 10 to 90° C., subjecting the xanthate threads to a treatment on fluted rollers, decomposing the xanthate
5 threads to threads of cellulose hydrate and cutting the threads to staples.

4. A process of producing curled staple fibers from viscose including the step of cutting the threads to staples which comprises spinning viscose into a precipitating bath in which the viscose is decomposed only to cellulose xanthate, subjecting the xanthate threads to a mechanical
10 curling operation and decomposing the threads to threads of cellulose hydrate.

5. A process of producing curled staple fibers from viscose which comprises spinning viscose into a precipitating bath in which the viscose is decomposed only to cellulose xanthate, subjecting the xanthate threads to a mechanical curling operation, cutting the threads to staples and
15 decomposing the cut threads to threads of cellulose hydrate.

WALTHER ZETZSCHE.
ERICH GRAUMANN.