

UNITED STATES PATENT OFFICE.

EMILE BRONNERT, OF MULHAUSEN, GERMANY.

PRODUCTION OF CELLULOSE SOLUTION FOR MANUFACTURING THREADS.

SPECIFICATION forming part of Letters Patent No. 646,351, dated March 27, 1900.

Application filed October 7, 1899. Serial No. 732,930. (No specimens.)

To all whom it may concern:

Be it known that I, EMILE BRONNERT, a citizen of Germany, residing at Niedermorschweiler, Mülhausen, Germany, have invented a certain new and useful Improvement in the Production of Cellulose Solutions Adapted for the Manufacture of Threads and for Textile Printing, (for which a patent has been applied for in Great Britain, dated June 27, 1899, No. 13,330; in Germany, dated May 8, 1899; in France, dated June 29, 1899, No. 278,372, and in Belgium, dated July 1, 1899, No. 143,570,) of which the following is a specification.

Under ordinary conditions it is very difficult to prepare concentrated and stable solutions of cellulose in ammoniacal cupric oxid solutions.

By my invention I effect an easy and certain preparation of the cellulose sufficient to insure that the latter shall dissolve not only quickly and completely in ammoniacal solution of cupric oxid, but also to such an extent and in a form so slightly altered that the solution is capable of yielding good threads of the required luster, strength, and elasticity. For this purpose the clean cellulose (cotton, wool, and the like) is treated with a feeble bleaching solution containing at most two grams of active chlorin per liter for two to four hours instead of with the energetic bleaching solution containing some five grams of active chlorin per liter for twelve to eighteen hours, as previously practiced, and either before or after this treatment (either before or after being equivalents according to my invention, and this specification and the appended clause of claim are intended in that light) the cellulose is subjected to an energetic hydrating process by treatment for about an hour with concentrated soda-lye at a low temperature, after which it is thoroughly washed. When the bleaching is effected first and the hydration afterward, the hydrated material may be treated again with a quite-weak bleaching liquor, if a high degree of mobility of the viscous solution is desired.

Cellulose hydrate prepared by any known method other than by treating cellulose with soda-lye and subsequently washing it may also be used for preparing useful solutions, provided that it is subjected to the action of

a bleaching solution containing at most two grams of active chlorin per liter for some 55 hours.

In any case it is advantageous to use electrolytically-prepared bleaching solutions; but provided the necessary precautions be observed any other oxidizing bleaching material, such as chlorid-of-lime solution and the like, will serve.

It is advantageous and economical not to dry the washed prepared material before dissolving it, as has been usual. It is best merely to submit the hydrated cellulose to centrifugal action and then to dissolve it directly in a wet state. The dissolution occurs almost immediately, and even when solutions that are stable at the ordinary temperature are to be made there need be no more copper in the solution than the quantity corresponding with the proportion between one molecular weight of cellulose and one atomic weight of copper, (one hundred and sixty-four grams of cellulose for sixty-four grams of copper.) The more concentrated the ammoniacal solution of cupric oxid the more of the prepared cellulose it can dissolve.

In most cases a solution containing eight to nine per cent. of cellulose and the corresponding quantity of copper dissolved in ammonia will suffice. For making threads this solution is expressed in the known manner through suitably-fine openings into a liquid which decomposes the solvent, and thus coagulates the cellulose.

Having thus described the nature of this invention and the best means I know of carrying the same into practical effect, I claim—

The herein-described process for producing cellulose solutions adapted for the manufacture of threads which consist in treating the clean cellulose with a concentrated caustic alkali lye, washing it with much water; treating it for two to four hours with a weak bleaching liquor, submitting it to centrifugal action and finally dissolving it while wet in an ammoniacal solution of cupric oxid.

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

EMILE BRONNERT.

Witnesses:

EMMA LETTER,
PAUL SCHLUMBERGER.