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EMBODIMENT IN THE PROCESS FOR MANUFACTURING ARTIFICIAL TEXTILE FIBRES FROM ANIMAL CASEIN

Antonio Ferretti, Milan, Italy; vested in the Alien Property Custodian

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The present invention has for its object an embodiment in the process for manufacturing artificial textile fibres from animal casein.

The process according to the invention includes (1) spinning filaments from a solution of animal casein and coagulating the same in acid baths and (2) rendering the filaments insoluble at a temperature above 25° C (twenty five) and about 70° C (seventy) in bath of formaldehyde to which soluble salts have been added, to render the filaments boilingproof.

The invention includes also (1) spinning filaments from a solution of animal casein and coagulating the same in acid baths (2) hardening the coagulated filaments by passing them through baths containing soluble salts at a temperature above 25° C (twentyfive) and about 40° C and (3) cutting the hardened filaments to the desired length and then insolubilising the fibres at a temperature above 25° C and about 70° C in baths of formaldehyde to which soluble salts have been added.

Further, the invention includes (1) spinning filaments from a solution of animal casein and coagulating the same in acid baths (2) hardening the filaments by passing the same firstly through a bath of sodium chloride at a temperature above 25° C and about 40° C and then through a bath containing aluminium salts and sodium chloride at a temperature above 25° C and about 55° C and (3) cutting the hardened filaments to the desired length and insolubilising the fibres at a temperature above 25° C and about 70° C in baths of formaldehyde to which soluble salts have been added.

Further more the invention includes (1) spinning filaments from a solution of casein, coagulating the same, in acid baths, insolubilising the same at low temperatures and (2) treating the filaments insolubilised at low temperatures with solutions of formaldehyde at a temperature above 25° C and about 70° C to render the same boiling-proof.

The invention will be now explained with reference to the example of carrying out into practice.

In the manufacture of fibres of cascin in which a first immersing bath for the filaments is provided, said first immersion bath for the filaments being composed of sodium chloride or other salts and a preparatory bath for rendering the fibres insoluble or a complete bath for rendering the fibre insoluble it is of great importance that the baths temperature be not below 25° C. The temperature must be preferably between 35° C and 40° C for the first bath of sodium chloride of other salts and between 50° C and 65° C for the preparatory bath for rendering the fibres insoluble, of aluminium salts, sodium chloride or for the complete bath for rendering the fibres insoluble of formaldehyde, aluminium salts and sodium chloride or other salts.

It is also important that the temperature in the bath, in which the fibres as soon as cut are introduced be not below 25° C, it being preferably to employ a temperature between the range 35° C to 40° C.

The treatment for rendering the casein fibres insoluble extends over a very long period, even several days, when carried out in a bath at ambient temperature, which is usually less than 25° C, nevertheless the fibres offer little resistance to boiling extending over a long period. On the contrary, it is found that when the temperature of the baths for rendering the fibres insoluble is raised for example to between 60° C and 70° C, perfect insolubility is obtained in less than nine hours, and the fibre which has been treated at that temperature completely resists boiling which may extend over many hours. Before proceeding to this strong treatment it is preferably to pass the fibres for some hours into the collecting bath of the cut fibres at a temperature of between 35° C and 40° C.

Complete resistance to the extensive boiling could also be obtained, when the casein fibres which have been rendered insoluble at a temperature which is lower than that indicated, for instance at 25° C to 50° C, are treated, preferably after being washed and dried, with an aqueous solution of formaldehyde at a temperature of about 60° C to 70° C for several hours, for example, five hours. In this case, the addition of the aluminium salts, of sodium chloride or of other soluble alkaline metal salts or earthy alkalies, to the formaldehyde solution, is unnecessary.

This treatment could be effected with the dried casein fibres at any desired time, that is to say, even after a period of many months or years from the manufacturing date of the fibre has elapsed.

Above all, it is of great importance that the treatment for rendering the fibres insoluble should be effected at temperatures which are not below 25° C, and that, when a temperature above 25° C, is applied, the relative operation should take place in an autoclave (digester) which should preferably be rotary, so as to maintain the fibres in motion while at the same time, the bath for rendering the fibres insoluble is made to circulate in the interior of the autoclave.

The further particulars of the manufacturing process of the textile fibres of casein may be modified in various ways without departing from the spirit of the invention.

The invention can also be applied to the manufacture of mixed fibres of casein and cellulose.

Of course the invention also covers the textile fibres of casein obtained by the indicated process.

ANTONIO FERRETTI.