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PROCESS FOR MANUFACTURING ARTIFICIAL SILK.

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This invention relates to a process for manufacturing artificial silk from fibre obtained from any caterpillar of the Bombycidae family by dissolving the fibre in a solution of zinc chloride mixed with zinc oxide, forcing the solution through capillary nozzles into filaments, passing the filaments into a solution of an acid salt, and hardening them by treating them with formaldehyde or its compound; and the object thereof is to spin artificially from solution of silk fibres silk filaments without any loss and thus to increase yield.

In this invention a solution of fibroin fibre ejected by caterpillars of any worm belonging to the family Bombycidae in zinc chloride is forced through capillary nozzles into filaments just as when manufacturing artificial silk, the filaments thus forced out are passed into a solution of an acid salt, then into a solution of a formaldehyde such as formalin or hexamethylene tetramine, and the filaments are dried, thus obtaining perfectly hardened filaments.

According to this invention, anything consisting of fibroin or fibroid such as cocoons of any worm belonging to the family Bombycidae, feather, &c., or thread, woven or knitted goods, wastes or rags thereof, can be utilized and artificially spun into even filaments without depending on the physiological faculty of insects. The product can be adjusted in its characteristics as desired, and as no waste is produced, the rate of yield is very high.

The following is an example of carrying this invention into practice.

Dissolve raw material in a solution of 20-40% of zinc chloride mixed with a small amount of zinc oxide, filter the liquid, or keep it still for some time, and separate the fluid from concrete residues. Force the thick fluid thus obtained from fine spouts of glass, or the like, and pass the filaments thus obtained into a solution of 40% ammonium-acid-sulphite. Then pass the filaments into a solution of 1% of a formaldehyde compound such as formalin, or hexamethylene tetramine, in ethyl alcohol, or methyl alcohol, and extract metal salts adhering thereto, at the same time solidifying the fibroin. The half dried filaments are then stretched, and perfectly dried.

Claims.

1. A process of manufacturing silk artificially consisting in dissolving fibrous substances, the chief ingredient of which is fibroid, in a solution of zinc chloride, forcing the fluid thus obtained out of capillary nozzles, and using as the first solidifying bath a solution of alkali-acid-sulphite and as the second solidifying bath a solution of formaldehyde in such as alcohol.

2. A process of manufacturing silk artificially consisting in dissolving a silky substance in a solution of zinc chloride mixed with a small quantity of zinc oxide, forcing out of capillary nozzles the fluid thus obtained, and passing the product successively through a bath of alkali-acid-sulphite and that of formaldehyde.

In testimony whereof I have signed my name to this specification.

MASARU HIRASAWA.