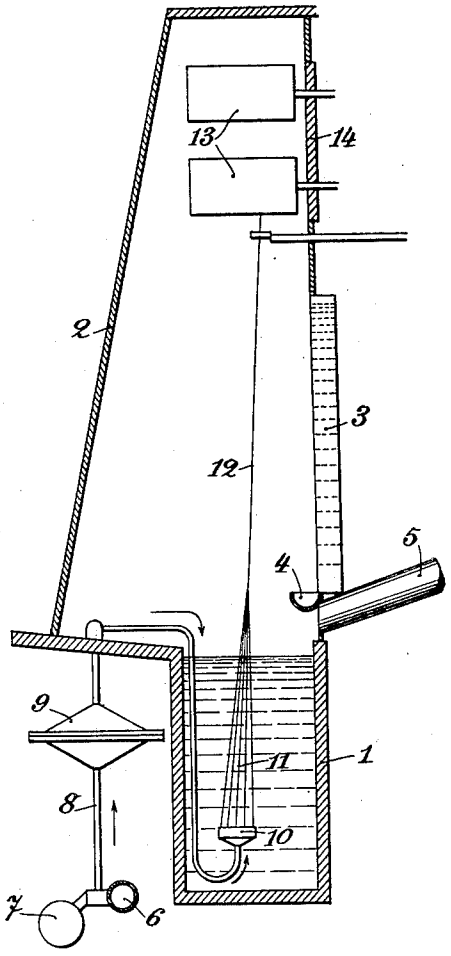
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PROCESS FOR THE MANUFACTURE OF ARTIFICIAL SILKS

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PROCESS FOR THE MANUFACTURE OF ARTIFICIAL SILKS

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1 Claim. (Cl. 18—54)

The present invention has for its object a process for the manufacture of artificial silks with very fine unitary threads obtained from solutions of nitrocellulose in pure methyl alcohol, that is to say without the addition of other solvents. Either synthetic methyl alcohol or the one resulting from the pyrogeneous distillation of wood may be differently used.

According to the invention, the nitrocellulose is previously dehydrated by extraction of the water either by means of ethyl alcohol at about 95°, or by means of methyl alcohol which is a little more diluted, between 80 and 85° for example.

The said dehydrating operation is effected in a hydro-extractor according to the usual process.

After the water has been extracted, the nitrocellulose may still contain about 30% of methyl alcohol at 80°, that is to say about 6% of water; the said nitrocellulose may be dissolved in pure methyl alcohol in the proportion of about 12 kg. of dry nitrocellulose, per 100 liters of methyl alcohol; the dissolution takes place very well without requiring the addition of ethyl alcohol or of ether and the collodion which is obtained is in a perfect condition for spinning.

The collodion which is thus obtained is spun or threaded by means of pumps and dies with multiple holes, made of silver, nickel or any other little oxidizable metal in an aqueous solution of methyl alcohol at a temperature which is not lower than 25° C., the concentration in alcohol of the coagulating bath being able to attain between 10 and 80%.

In order to prevent the unitary threads from sticking to one another, it is necessary to add to the bath of coagulation either soap at a concentration ranging between 0.5 and 3% for example, or an emulsion of vegetable oils in soap or an emulsion of animal or mineral oils or waxes. It is thus possible to prevent the threads from adhering to one another, or from agglomerating, by treating the silk, while the same is wound, with the same bath of coagulation to which the same products are added.

The rate of expansion for silk having from 1 denier to 0.7 denier per thread may be comprised between 35 and 50 meters per minute.

Collodion made with pure methyl alcohol and dried nitrocellulose may be spun in the same way.

An essential point is that the silks obtained must be, before denitration, perfectly dried so as to allow a complete retraction; the operation may be performed in a tunnel drier, the silks in skeins or spools being watered before they come out so that they can be handled and transported without danger. Another process consists in drying the silk whilst the same is still on spools, in a vacuum drier, the spools or bobbins being mounted tubes through which a stream of tepid water is passing; in the vacuum of the apparatus, be it only a partial one, the nitrocellulose cannot burn and, if the apparatus is filled with water before the removal of the spools or bobbins, one has nothing to handle but spools loaded with wet nitrocellulose, that is to say a quite uninflammable one.

This process of manufacture has the advantage of allowing to easily recover the methyl alcohol which is used.

The greatest part of the alcohol is first fixed in the bath of coagulation itself which constantly enriches itself in alcohol, whence the necessity of diluting it through a constant admission of water.

The removed bath is then submitted to a simple distillation which allows to recover the alcohol.

A form of construction of the plant which can be utilized for carrying out the process according to the invention is represented by way of example in vertical section in the accompanying drawing:

1 is a vat containing the bath of coagulation and enclosed within a glazed or metallic funnel 2, a wall 3 of which is cooled by the circulation of a cooling fluid or any other means, in order to condensate a part of the alcohol vapours evolving from the bath. The alcohol which is condensated in this manner trickles down along the said wall and is collected by means of a gutter 4. A pipe 5 discharging into the funnel, preferably below the said gutter, is connected to an aspirator (not shown) producing a slight vacuum and supplying a recovering apparatus with the excess of methylic vapours which have not been condensed on the cold wall 3.

The collodion to be spun is admitted through a pipe 6 into a pump 7 which drives the same through a pipe 8 and a strainer 9 into a die 10 disposed in the bath. The filaments 11 leaving the said die and coagulated under the action of the bath are gathered into a thread 12 which is guided by a thread-guide and winds itself upon spools 13 carried by a support 14. The driving means for these spools which makes no part of this invention has not been represented.

The alcohol with which the thread wound upon the spools is impregnated, is recovered separately when the said spools have been carried to the drying apparatus acting under vacuum.

We claim:

A process for the manufacture of artificial silks with very fine unitary threads, consisting in dissolving the nitrocellulose containing about 6% of water in pure methyl alcohol and in spinning the solution thus obtained through an aqueous solution of methyl alcohol with the addition of a lubricant capable of preventing the spun threads to adhere to one another.

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