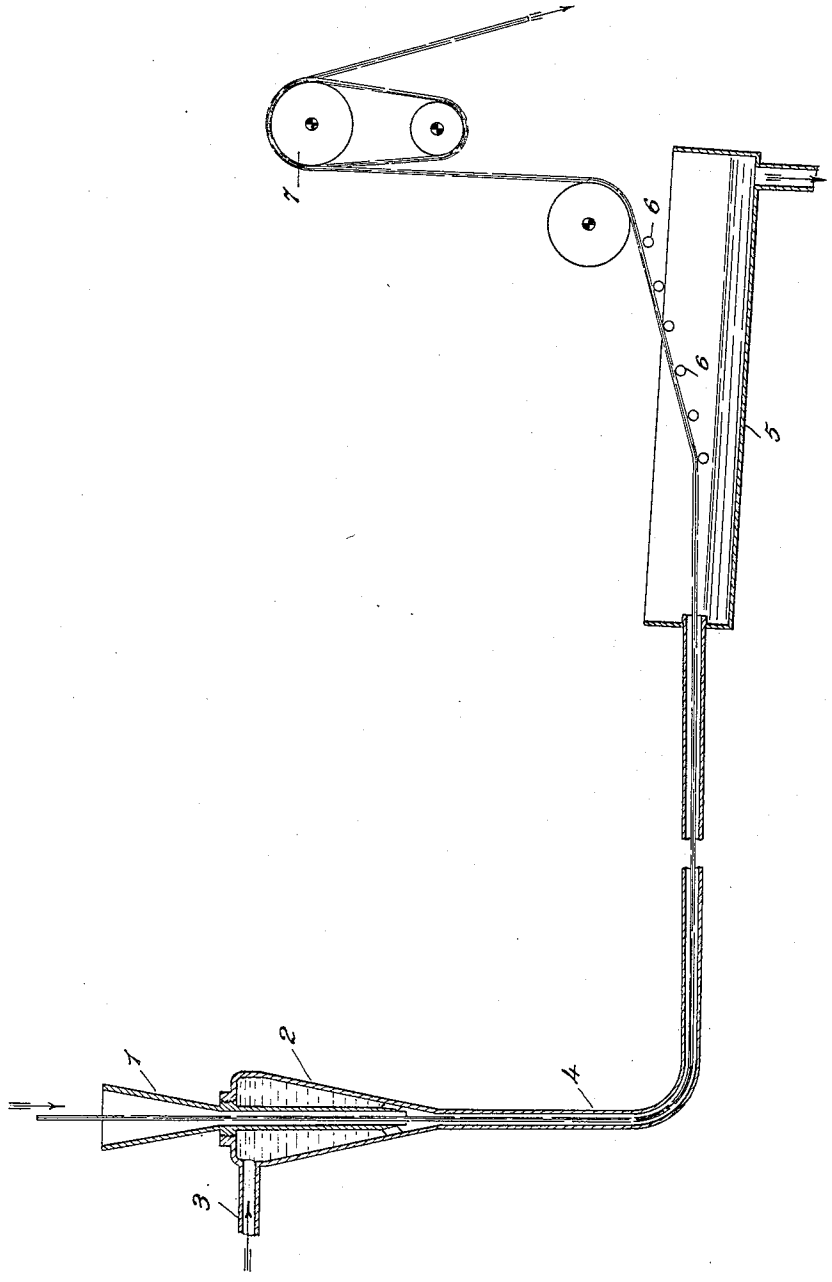
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WASHING, DESULPHURIZING, BLEACHING, FINISHING, AND LIKE TREATMENTS OF ARTIFICIAL YARNS

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WASHING, DESULPHURIZING, BLEACHING, FINISHING, AND LIKE TREATMENTS OF ARTIFICIAL YARNS

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1 Claim. (Cl. 8—151)

This invention relates to the washing, desulphurizing, bleaching, finishing and like treatments of artificial yarns or filaments.

It is well known that there are broadly two types of process for the manufacture of artificial short or staple fibres which differ in that according to the one the continuous filaments are cut when still acid while in the other the cutting occurs after washing and in some cases after desulphurizing, bleaching, dyeing, and the like operations have been effected.

It has been shown that processes of the second type present remarkable advantages over processes of the first type and in order to render more rational the washing and subsequent treatments various provisions have been made and adopted some of which are the subject matter of patents.

According to some of said processes the bundle of continuous filaments is passed through a shower of water in the washing, and under a shower of the solutions required for the other treatments: according to others the washing and treatments are executed on the sliver immersed in a vat or open channel.

In the specification of another patent of same applicant a process is described for washing, desulphurizing, bleaching and dyeing artificial yarns in countercurrent in open channels.

According to the invention the washing, desulphurizing, bleaching, dyeing or other finishing treatments are effected in one or more tubes through which water or other liquid appropriate for the treatment of the yarns or filaments is caused to travel, so entraining the bundle of filaments or sliver.

Preferably in accordance with the invention the liquids are admitted into the tubes in which the treatment is effected by means of an injector, the liquid thus being caused to entrain the yarn, bundle of filaments or sliver.

The invention extends also to apparatus for carrying the invention into effect, such apparatus comprising a tube or a series of tubes each of which is connected at one end with an injector and discharging into a vat or channel intended for the collection of the liquid and preliminary separation of the bundle of filaments from the liquid.

The treatments effected in accordance with the invention take place under pressures above atmospheric pressure, and this intensifies the action of the reagents and considerably reduces the duration of the different treatments and the quantities of water and/or solutions required.

The treatment is highly favored by the fact that the liquid entraining the sliver and running at a speed much higher than that of the sliver opens the sliver in such a way that the fibres are uniformly distributed throughout the cross section of the tube, consequently there is a rapid exchange of liquid which results in an intimate contact with the fibres.

By the process according to the invention excellent results are obtained in washing, desulphurizing, bleaching, dyeing and the like treatments of artificial yarns in a very short time with the employment of a very simple device which does not occupy a great deal of space.

At the outlet of each tube the sliver is caused to pass over a grid consisting of glass bars or other materials resistant to the chemical action of the liquid used for the treatments so that the greater part of the liquid may be separated from the fibres, these fibres being then conveyed to a squeezing device comprising either chamfered or grooved rollers pressed against one another or preferably only by a series of rollers on which the sliver is wound and by which the liquid is expelled by centrifugal force.

Apparatus in accordance with the invention is illustrated schematically and by way of example in the accompanying drawing.

The bundle of filaments, sliver or yarn passes through the funnel **1** into the body of the injector **2** into which by way of the tube **3** is admitted the washing water as the other liquids appropriate for the various treatments. The bundle of filaments or sliver in continuous contact with the liquid passes through the tube **4**, being delivered in to the vat or channel **5** in which is arranged a system of squeezing bars **6** of glass, porcelain, ebonite and the like, these bars having the object of allowing the separation of the excess of liquid without the bundle or sliver becoming tangled. The bundle or sliver is then caused to pass round the squeezing rollers **7** before being conveyed into a subsequent tube. For a bundle or sliver having a titre of 300,000 denier with a speed of travel of 100 metres per minute, tubes may be used, for instance of 30 mm. diameter and a length of 20 to 40 metres for each treatment. Each treatment requires one or more tubes, for instance for the washing of the sliver impregnated with the spinning bath three tubes, are employed the water being recovered, that is the water discharged from the third tube is injected in the second tube, and the water discharged from the second tube used for feeding the first tube. For the treatments of desulphur-

izing, and bleaching only one tube is required for each treatment while for dyeing one or more tubes are used according to the coloring substances employed.

The treatments disclosed may be also used for artificial yarns of regenerated cellulose even when they are not destined for the production of short or staple fibres. In this case the groups of filaments coming from the spinning machine are gathered on appropriate collectors.

For the production of short fibres the bundle of filaments is cut by means of apparatus appropriate for the purpose.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

A process for the treatment of continuous threads of artificial yarns or filaments by liquids passing through a tube larger than said yarn comprising the steps of passing the continuous yarn through said tube and injecting under pressure a continuous stream of the treating liquid through said tube in a direction parallel to the direction of movement of said yarn the pressure being maintained throughout the tube so as to move said yarn through said tube in a longitudinal direction and so as to keep the yarn taut.

ALFREDO NAI.