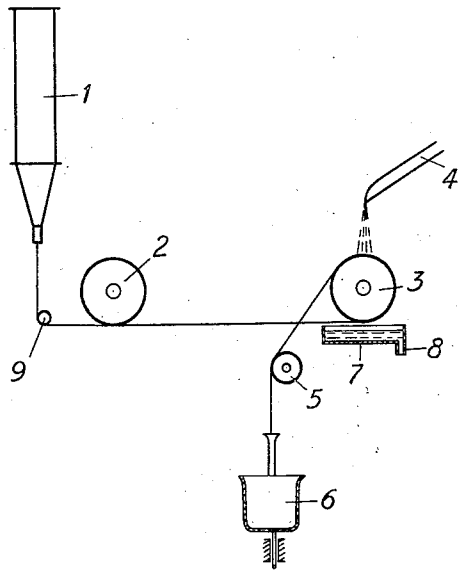
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APPARATUS FOR THE PRODUCTION OF ARTIFICIAL THREADS FROM CUPRAMMONIUM SOLUTION

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APPARATUS FOR THE PRODUCTION OF ARTIFICIAL THREADS FROM CUPRAMMONIUM SOLUTION

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1 Claim. (Cl. 18—8)

The invention relates to an apparatus for the production of particularly tear-resisting artificial threads by the copper oxide ammonia stretch spinning process. This process has been carried out in such a way that the threads, after leaving the funnel, have been treated with acid under tension and stretching. In such operations it has been carried out so that the drawing apparatus effected the tensioning during the acid treatment as well as the tensioning by the drawing out of the threads in the spinning funnel, the flow of the precipitating liquid acting to assist in the spinning funnel.

According to the invention, the process is so carried out that the threads are only preliminarily formed (preliminarily stretched) by the precipitating liquid in the spinning funnel and are so far coagulated that they are still plastic at the outlet from the spinning funnel, whereupon the threads are subjected to a second considerable stretching outside the spinning funnel and before the definite hardening. The proportion of the definite stretching outside the spinning funnel to the preliminary stretching in the spinning funnel is selected to be so large that the threads receive an increased, hitherto unattained, strength.

The complete hardening of the threads outside the spinning funnel takes place in the usual manner by acid treatment. The acid treatment can take place according to the invention after the threads have left the spinning funnel. The stretching must then, however, approach so closely to the acid treatment that it is effected before the complete hardening of the threads takes place under the influence of the acid. The acid treatment may also be effected immediately after the definite second stretching.

For carrying out the process according to the invention an apparatus may be used, in which two drawing devices rotating at different speeds are arranged behind the spinning funnel, for example, a drawing roller behind the spinning funnel and a second drawing roller in front of the reel, bobbin, spinning centrifuge or the like, and the second drawing roller running at a higher speed than the first. If the material and proportions of the drawing rollers are so chosen that the threads cannot slip on them, these can govern the proportion of the stretching in the spinning funnel and between the two drawing devices.

In place of the first drawing device, a thread conductor or a system of thread conductors also may be arranged behind the spinning funnel, and the ratio of the friction between them so chosen that the stretching by the drawing device does not spread backwards to the spinning funnel, in other words, so that the stretching takes place in the spinning funnel alone by the speed of the precipitating liquid flowing through it.

In all of the cases described, the acid treatment can take place either just before or in the second drawing device or on the way from this latter to the bobbin, reel, spinning centrifuge or the like. A bobbin or a reel may also be used immediately as the second drawing device. The acid treatment then takes place on it.

An example of construction is illustrated in the drawing of a device in accordance with the invention.

The figure shows a spinning apparatus with two drawing rollers and a spinning centrifuge.

In the figure, the threads are first of all precipitated and drawn out to a certain degree in a flowing precipitating liquid in a spinning funnel 1 of the usual kind. The movement of the thread in the spinning funnel is effected once by the flowing precipitating liquid and then by the roller 2 driven at a particular speed, the roller 2 being arranged behind the usual guide rod 9. Behind the roller 2 a drawing roller 3 is arranged and is driven likewise at a definite but greater speed, the acidifying liquid flowing on to the roller 3 from a channel 4. A guide roller 5 then conducts the thread to the spinning centrifuge 6. The roller 5 may be driven or not according to the nature of the thread. A catch bowl 7 is disposed under the roller 3 for the acidifying liquid which is conducted off through a pipe 8.

In place of the guide rod 9 a system of, for example, thread conductors, arranged to displace the threads, for example of rods, may be used which conduct the thread in a zigzag path.

What we claim is:

An apparatus for the production of extremely fine and highly tear-resistant artificial threads by the copper oxide ammonia stretch spinning process, comprising a stetch spinning apparatus in which the thread is preliminarily coagulated in a flowing precipitating liquid, a stetching device

composed of positively driven rollers disposed in the open air beyond the spinning apparatus, said rollers and the path of travel of the filaments being so arranged relative to each other as to avoid slipping between the filaments and the rollers and being operated at such relative speeds as to give a definite predetermined stetch to the filaments therebetween, a fixed guiding means positioned between the spinning apparatus and the first drawing roller to prevent transmission of the drawing force to the filaments within the nozzle, and means for applying a hardening liquid to the filaments at the last stretching roller.

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