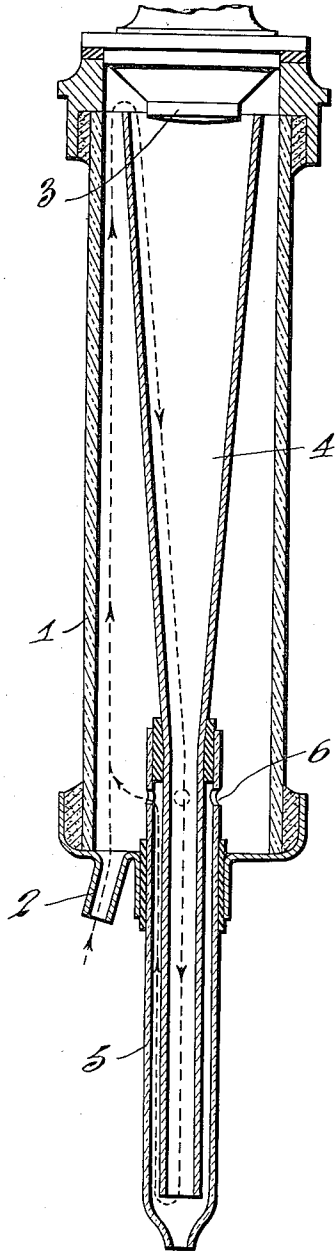


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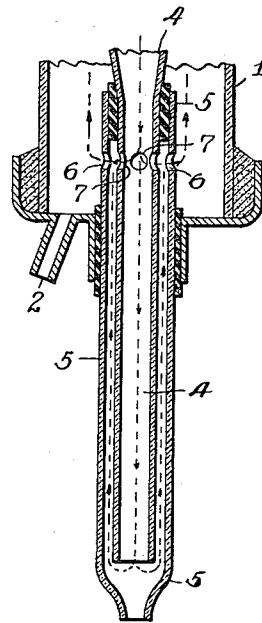
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APPARATUS FOR SPINNING CUPRAMMONIUM SILK ACCORDING  
TO THE STRETCH SPINNING PROCESS  
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*Fig. 1.*



*Fig. 2.*



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## APPARATUS FOR SPINNING CUPRAMMONIUM SILK ACCORDING TO THE STRETCH SPINNING PROCESS

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10 Claims. (Cl. 18—8)

This invention relates to an improvement for stretch spinning apparatus in the production of artificial silk, particularly cuprammonium silk. By means of this invention part of the precipitant is caused continually to circulate within the spinning apparatus. In this manner it is possible by means of the apparatus to reduce the quantity of precipitant employed without the necessary mechanical effect of the precipitant being diminished. With this apparatus, the ammonia contained in the draining precipitant is very considerably strengthened, thus rendering the recuperation of the precipitant employed much more profitable, without the quality of the artificial silk itself suffering in any way whatsoever. The apparatus according to the invention is constructed in such a manner that a dividing of the circulating stream of precipitant takes place at a point just above the point of exit of the precipitant.

In this manner a laminary stream, i. e. a stream free from whirls, is obtained to within a very short distance of the mouth of the spinning apparatus, thus permitting the filament to coagulate in a perfect manner and preventing the tearing away of single filaments. The dividing of the circulating precipitant at so short a distance from the mouth of the spinning apparatus has no detrimental effect on the filament, as coagulation has then been carried out to a sufficient degree.

The apparatus of the present invention is constructed in such a manner that a funnel, within a cylindrical casing is concentrically surrounded by another pipe, water-tight with respect to the casing, which tapers down to a narrow outlet just below the mouth of the funnel. This outer pipe communicates with the outer space of the casing in some suitable manner. This invention may be applied to most of the spinning apparatus known up to the present, in which a funnel is contained in a cylindrical casing.

The apparatus has the advantage of being extremely simple. In the simplest manner, the spinning apparatus of the above mentioned type, known up to the present, may be transformed into apparatus after the manner of this invention.

A further advantage of the apparatus is that deposits of impurities on the sides of the casing are comparatively trifling during use.

In the drawing:

Figure 1 illustrates the vertical cross section of one form of the apparatus comprising the invention and

Figure 2 is a detail vertical section of a modified form thereof.

The feed-pipe (2) and the spinning-nozzle (3) are in the cylindrical casing (1). The cylindrical casing also contains a funnel (4), which is surrounded by a slightly larger pipe (5) at its lower extremity. Shortly below the lower extremity of the funnel, the pipe (5) tapers down to a narrow outlet. The funnel (4) and the pipe (5) are concentric to each other. With respect to the cylindrical casing, the pipe (5) is water tight and is provided with apertures (6) that form a communication with the interior of the casing. On setting the spinning apparatus into operation, a considerable portion of the precipitant divides off at the lower extremity of the funnel, flows through the space between the funnel (4) and the surrounding pipe (5), passes through the apertures (6) and combines with the fresh precipitant entering through the feed-pipe (2). The non-circulating precipitant leaves the spinning apparatus at the tapering part of the pipe (5) shortly below the lower mouth of the funnel. The direction taken by the precipitant is marked in the drawing by arrows.

A further development of this invention, as shown in Figure 2 of the drawing, is the providing of the funnel (4) at the lower extremity with a number of lateral apertures, that communicate with the surrounding pipe (5). According to this arrangement part of the circulating precipitant branches off above the mouth of the funnel (4) and the formation of whirls is decreased to a still greater degree.

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

1. An apparatus for producing artificial silk according to the stretch spinning process, comprising a casing, a tube passing through the end of said casing, said tube being provided with openings communicating with the casing, a funnel concentrically arranged within the casing and extending into the tube to a point adjacent the outlet end thereof, means for sealing the tube above the said openings, a spinning nozzle positioned to discharge extruded filaments into said funnel and an inlet tube in said casing positioned to cause the flow of precipitating liquid upwardly in said casing past said openings.

2. An apparatus for producing artificial thread according to the stretch spinning process, comprising a casing, an inlet for supplying precipitating liquid to said casing, a funnel positioned with-

in said casing, a spinning nozzle positioned to discharge extruded filaments into said funnel, a tube surrounding the lower portion of said funnel and having a constricted opening below, adjacent and smaller than the outlet thereof, said tube being provided at its upper end portion with an aperture communicating with the interior of the casing, and said constricted opening being so proportioned as to cause a portion of the precipitating liquid to flow upwardly in said tube, and means for sealing the tube above the aperture.

3. An apparatus for producing artificial threads according to the stretch spinning process, comprising a casing, a funnel positioned within said casing, a spinning nozzle positioned to discharge extruded filaments into said funnel, a tube surrounding the lower end portion of said funnel and having a constricted opening below, adjacent and smaller than the outlet of said funnel, said tube communicating at its upper end with the casing, openings formed in said funnel intermediate the ends thereof and communicating with the interior of said tube, and means to cause liquid to flow upwardly in said casing on the outside of the funnel and downwardly within said funnel, all constructed and arranged to cause a portion of the liquid in said funnel to flow into the casing through said tube.

4. An apparatus for producing artificial threads according to the stretch spinning process, comprising a casing, a spinning rose arranged at the top of the casing, a tapered member inserted in the casing below the spinning rose, an inlet pipe positioned in said casing below the upper edge of said tapered member in such a position as to cause the precipitating fluid to flow upwardly in said casing, a tube passing through and sealed within the lower end of the casing, said tube surrounding the lower portion of the tapered member, having its outlet adjacent the outlet of the tapered member and being provided with holes leading from the interior of the tube to the casing, and a packing arranged above said holes between the tapered member and the surrounding tube.

5. An apparatus for producing artificial filaments according to the stretch spinning process, comprising a casing, a funnel within the casing, a spinning nozzle positioned to discharge extruded filaments into said funnel, a tube surrounding the lower portion of said funnel and having an opening below and adjacent the outlet end of said funnel and smaller there than, said tube communicating at its upper end with the interior of the casing, and means to cause liquid

to flow upwardly in said casing and into the top of said funnel, all constructed and arranged to cause a portion of the liquid within said funnel to flow into said tube and thence into the interior of the casing.

6. The combination as claimed in claim 5 wherein said tube is provided with apertures in its walls communicating directly with the interior of the casing.

7. The combination as claimed in claim 5 wherein said funnel has a portion extending through the bottom of the casing and said tubular member is fitted tightly in the casing and extends through the bottom thereof, said outlet and said opening being substantially below the bottom of the casing.

8. The combination as claimed in claim 5 wherein the lower portion of said funnel is provided with a plurality of apertures whereby liquid may flow from within the funnel into the tube.

9. An apparatus for producing artificial threads according to the stretch spinning process, consisting of a casing, a spinning rose arranged at the top of the casing, a tapered member inserted in the casing below the spinning rose and having an outlet at its lower end, an inlet pipe positioned in said casing below the upper edge of said tapered member, a tube passing through and sealed within the lower end of the casing, said tube surrounding the lower portion of the tapered member, having an opening adjacent and smaller than said outlet and so proportioned as to cause a portion of the precipitating liquid to flow upwardly in said tube, and being provided with apertures leading from the interior of the tube to the casing, and means arranged above said apertures for preventing the flow of liquid from the casing directly into the tube.

10. An apparatus for producing artificial filaments according to the stretch spinning process, comprising a casing, an inlet for supplying precipitating liquid to said casing, a funnel within the casing, a spinning nozzle positioned to discharge extruded filaments into said funnel, a tube surrounding the lower portion of said funnel and having an opening below and adjacent the outlet end of said funnel and more constricted than the outlet of said funnel, said tube communicating at its upper end with the interior of the casing, all constructed and arranged to cause a portion of the liquid within said funnel to flow into said tube and thence into the said casing.

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