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K. GRUNERT

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PROCESS OF PRODUCING ARTIFICIAL SILK FILAMENTS BY DRAWING

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Fig. 1.

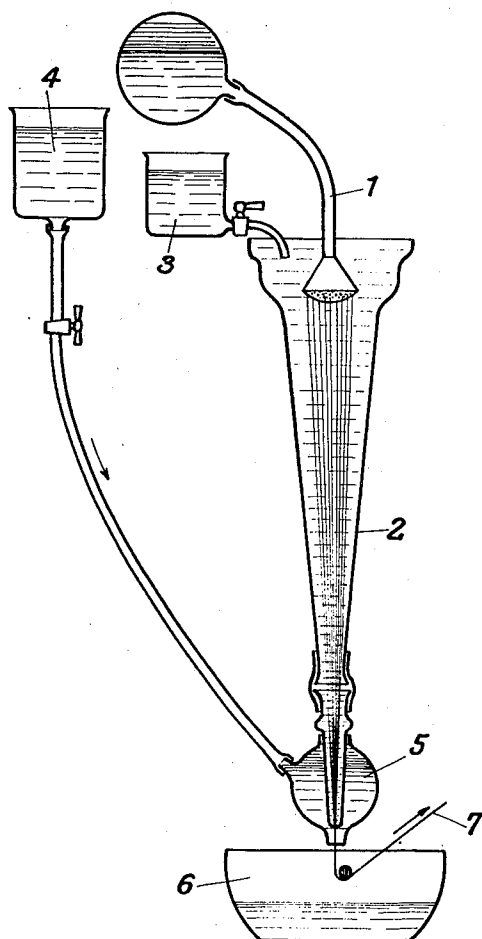
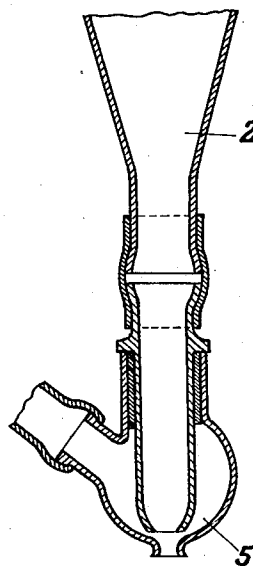


Fig. 2.



Inventor:
Kurt Grunert
by Carl F. Reichelt,
Attorney

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KURT GRUNERT, OF TURIN, ITALY.

PROCESS OF PRODUCING ARTIFICIAL-SILK FILAMENTS BY DRAWING.

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This invention relates to a new process for the production of artificial silk filaments by drawing. I am aware that processes for the production of artificial silk from cuprammonium cellulose solutions are known by means of a spinning apparatus employing a vertically arranged and freely suspended column of liquid to permit a free and frictionless passage of the filament bunches forming, while the drawing and precipitation of the individual filaments is caused by the precipitant forming the suspended column of liquid. The speed of flow of this precipitant within the spinning cylinder must be much less than the speed of the free fall. To accomplish this the column of liquid within the spinning cylinder was subjected to siphon action and the speed and quantity of the precipitant adjusted within the limits required by altering the difference of level between inlet and outlet or by throttling the supply.

However, this process is disadvantageous in so far as the suspended column of liquid is subjected to the action of a vacuum which during the spinning process causes the air contained in the precipitant to form bubbles and settle underneath the spinning shower. In this manner the formation of filaments is interfered with to such an extent that the liquid often breaks under the action of the vacuum and the contents of the spinning device run out so that a longer interruption of work becomes necessary.

The invention eliminates the suspended column of liquid and the drawbacks connected therewith by placing the liquid moving within the spinning device under atmospheric pressure while the speed of its movement is adjusted by a second flow of liquid which has a retarding effect. It is possible to use precipitants which have not been deprived of air. To facilitate the supply of the second liquid a device has been provided for it at the outlet of the precipitant, and the regulation of speed of the precipitant can be influenced either by the power of the kinetic or potential energy of the second flow of liquid.

The illustrations show one form of the invention in section, Fig. 1 showing an assembly of the various elements and Fig. 2 showing the lower end of the spinning funnel with the connecting container on a larger scale.

1 is the spinning shower emitting the spinning solution which enters the spinning funnel 2. 3 is a vessel containing the precipitant entering the spinning funnel 2 through a small tube provided with a regulating cock. 4 is a second vessel for the reception of a second liquid which through a piece of pipe provided with cock and hose enters the container 5 arranged at the lower end of the spinning funnel.

During the spinning process proper the liquid leaving the container 4 acts contrary to the precipitant emitted by the funnel 2, and the speed of the precipitant will be regulated according to the kinetic or potential energy of the liquid leaving the container 4. After their union both liquids are caught in the basin 6 while the filament 7 can be wound up.

I claim:—

1. The herein described process of producing artificial silk filaments, especially from cuprammonium cellulose solutions, by drawing, which consists in causing the solution, on leaving a spinneret, to enter a spinning funnel with a precipitating liquid, the spinning funnel having an open top, keeping the precipitating liquid and threads under atmospheric pressure therein, and regulating the outlet velocity of the precipitating liquid by the counteraction of a second liquid meeting the first liquid at the point, where it comes from the funnel whereupon both liquids jointly flow into a basin and the filament is taken off.

2. The herein described process of producing artificial silk filaments, especially from cuprammonium cellulose solutions, by drawing, which consists in causing the solution, on leaving the spinneret, to enter a spinning funnel with a precipitating liquid, the spinning funnel having an open top, keeping the precipitating liquid and the threads under atmospheric pressure therein and regulating the velocity of discharge from the said funnel by the kinetic or potential energy, of a second liquid meeting the first liquid at its point of outlet in a common container, whereupon both liquids flow into a basin and the filament can be wound up.

In testimony whereof I affix my signature.

KURT GRUNERT.