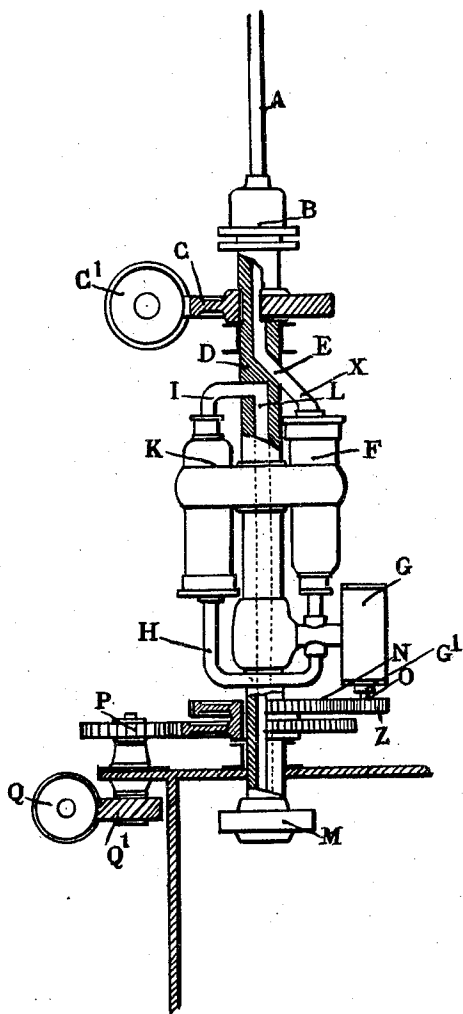


June 9, 1931.

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1,809,303

APPARATUS FOR SPINNING ARTIFICIAL THREADS FROM
SOLUTIONS OF CELLULOSE ETHERS OR ESTERS
Filed March 27, 1928



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APPARATUS FOR SPINNING ARTIFICIAL THREADS FROM SOLUTIONS OF CELLULOSE
ETHERS OR ESTERS

Application filed March 27, 1928, Serial No. 265,161, and in France December 26, 1927.

Apparatus for spinning artificial threads from solutions of cellulose ethers or esters include known devices in which the spinning nozzle rotates either on its own geometrical axis or on an axis exterior thereto. The cellulose solution is projected, through the orifices of said nozzle, into a spinning chamber and in the form of liquid jets which solidify and undergo transformation into artificial threads.

In all the known devices described in the technical literature, the rotary portion is restricted to the spinning nozzle properly so called, or, in conjunction therewith, to the terminal member of the supply pipe.

U. S. patent application No. 209,018 filed on the 28th July, 1927 in the name of Mr. Thenoz, for an "apparatus for spinning artificial threads," describes an improvement in the form and arrangement of the orifices in a device of this kind.

In the application of these rotary spinning nozzles, it has been found that, in spinning under very heavy pressures and with collodions of high temperature or high concentration, it is impossible to obtain a hermetical junction between the rotary portions and the fixed portions. The result is that two kinds of inconveniences arise, namely losses of collodion (which produce variation in the size of the thread), and secondly, influx of air by the direct introduction of small bubbles which cause breakage of the thread. These drawbacks also occur in operating under ordinary conditions of temperature and concentration.

Moreover, the wear resulting, in this type of spinning nozzle, from the friction between the fixed and rotary members, and from the relatively complicated nature of the joints at that point, introduces into the collodion metallic or other particles, which, although infinitesimal, are sufficient to contaminate the cellulose solution and rapidly clog the filter of the spinning nozzle.

The present invention has for its object to obviate all these inconveniences. It consists in imparting a rotary motion, not only to the spinning nozzle, but also to the filters, the supply pump and the regulating members

if any. Under these conditions, any losses of collodion which might occur between the fixed and rotary members take place before the pump is reached, and therefore cannot influence the size of thread. Similarly, any detritus of metallic (or other) particles resulting from the wear on the fixed or rotary members and liable to enter the collodion, will be retained by the filters, beyond which latter there is no joint in the channels in which the collodion circulates. All this portion of the piping rotates with the spinning nozzle and filters.

A device embodying this principle is illustrated, by way of example, in the single figure of the accompanying drawing, but it must be understood that this embodiment is not restrictive, and that the invention can be carried out in various modifications.

The collodion is supplied through a pipe A, which is stationary and is connected, by means of a stuffing-box joint B, with the rotatably mounted shaft D provided with passages E and L disposed as shown. This shaft D which is set in rotary motion by pinion gear CC¹, carries the spinning nozzle M, which consequently shares said rotary motion.

The solution of cellulose ether or ester supplied through the pipe A, enters the passage E in the shaft D. A lateral tube X, which opens into said passage and shares the rotary motion of the shaft, leads the solution to the filter F.

Issuing from this latter, the solution reaches the feed pump G, through which it passes, and on issuing therefrom is directed, by a tube H, into a second filter K. On leaving this filter, it is conveyed, by a tube I, into the axial bore L of the shaft D and reaches the spinning nozzle M. The filter F, pump G, tube H, filter K and tube I are all fixedly mounted upon the shaft D, and consequently rotate with the spinning nozzle. The rotation of the central hub G² of the feed pump is effected by the following mechanism:—

The driving pinion Z of said pump engages with a pinion N, which is actuated by a pinion P engaging a pinion O integral with N. The pinion P is driven by the general

transmission mechanism of the spinning frame, through gearing QQ¹.

It follows that the pump pinion Z is actuated, after the manner of a planet wheel, in relation to the pinion N integral with the shaft D. By varying the speed of the gear QQ¹ in relation to that of the main shaft, the pump delivery can be adjusted to correspond with the desired size of the thread.

I claim:—

1. Apparatus for spinning artificial threads from solutions of cellulose ethers or esters, comprising a collodion supply pipe, a spinning nozzle rotatably mounted with respect to the supply pipe, and means rotatable with the nozzle for filtering and for regulating the collodion supplied to the nozzle from the pipe, said means being fixed relatively to the nozzle.

2. Apparatus for spinning artificial threads from solutions of cellulose ethers or esters, comprising a collodion supply pipe; and a spinning nozzle, filtering means and feed pump connected together and rotatable as a unitary structure with respect to the supply pipe.

3. Apparatus for spinning artificial threads from solutions of cellulose ethers or esters, comprising a collodion supply pipe; and a spinning nozzle, filtering means and feed pump fixed in relation to each other but rotatable as a unitary structure with respect to the supply pipe; and means for actuating the pump during rotation of such unitary structure.

4. Apparatus for spinning artificial threads from solutions of cellulose ethers or esters, comprising a collodion supply pipe; a spinning nozzle, filtering means and feed pump fixed in relation to each other but rotatable as a unitary structure with respect to the supply pipe; gearing for rotating said unitary structure; and gearing for actuating the pump during the rotation of such structure.

5. Apparatus for spinning artificial threads from solutions of cellulose ethers or esters, comprising a collodion supply pipe, a rotatable shaft forming an extension of the supply pipe and having separate inlet and outlet passages, a spinning nozzle secured on the outlet end of the shaft, filter means rotatable with the shaft and connecting the inlet and outlet passages therein, and gearing for rotating the shaft.

6. Apparatus for spinning artificial threads from solutions of cellulose ethers or esters, comprising a collodion supply pipe, a rotatable shaft forming an extension of the supply pipe and having separate inlet and outlet passages, a spinning nozzle secured on the outlet end of the shaft, filter means carried by the shaft and connecting the inlet and outlet passages therein, a feed pump also carried by the shaft and communicating with

the filter means, and gearing for rotating the shaft.

7. Apparatus for spinning artificial threads from solutions of cellulose ethers or esters, comprising a collodion supply pipe, a rotatable shaft forming an extension of the supply pipe and having separate inlet and outlet passages, a spinning nozzle secured on the outlet end of the shaft, filter means carried by the shaft and connecting the inlet and outlet passages therein, a feed pump also carried by the shaft and communicating with the filter means, gearing for rotating the shaft, and separate gearing for actuating the feed pump.

8. Apparatus for spinning artificial threads from solutions of cellulose ethers or esters, comprising a collodion supply pipe, a spinning nozzle rotatably mounted with respect to the supply pipe, and a feed pump fixed with relation to but rotatable with the nozzle for regulating the supply of collodion thereto.

In testimony whereof I affix my signature.

UGO MANCINI.