Sept. 12, 1933. C. HERRMANN 1,926,536

HANDLING OF ARTIFICIAL THREADS

Filed April 13, 1931

Fig. 1.

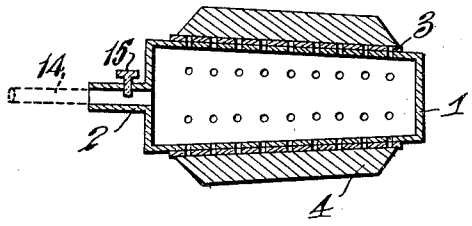


Fig. 4.

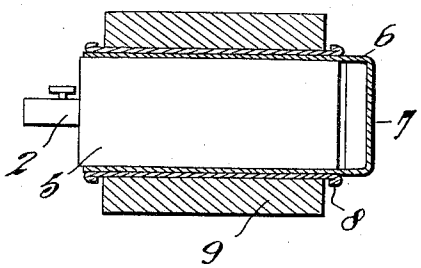


Fig. 2.

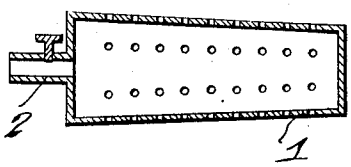


Fig. 5.

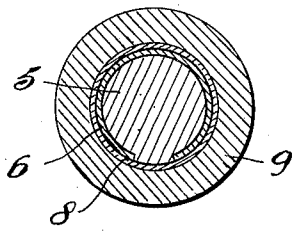


Fig. 3.

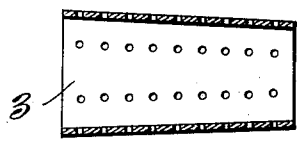
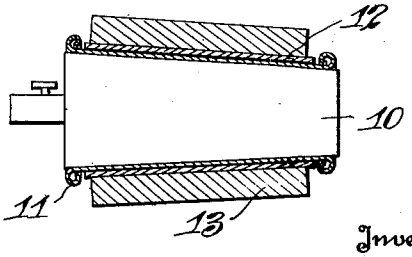


Fig. 6.



Inventor

Conrad Herrmann

By Paul R. Ames

Attorney

Patented Sept. 12, 1933 1,926,536

UNITED STATES PATENT OFFICE

1,926,536

HANDLING OF ARTIFICIAL THREADS

Conrad Herrmann, Wuppertal-Elberfeld, Germany, assignor to American Glanzstoff Corporation, New York, N. Y., a corporation of Delaware

Application April 13, 1931, Serial No. 529,866, and in Germany April 15, 1930

15 Claims. (Cl. 18—8)

This invention relates to the handling of artificial filaments while being treated after precipitation in the manufacture of artificial cellulosic threads.

It has been the practice in the manufacture of spun rayon yarn, such, for example, as viscose or cuprammonium yarn spun according to the wet spinning process, to wind the newly spun yarn upon a cylindrical spool of about 7, 9, etc. centimeters diameter, the spools in some cases being perforated. After washing and drying the spooled bodies, or in some cases also desulphurizing, freeing from copper, deacidifying or bleaching, etc. them, the filaments are unwound and rewound upon another spool before or while being subjected to the various textile processes, if this has not already been done previously for the purpose of treating the yarn.

It is an object of the present invention to materially shorten the above procedure by omitting the unwinding and rewinding of the thread between the precipitating step and the use of the yarn by the consumer. It is also an object to provide an improved receiving device whereby this improved result may be accomplished. Other objects will become apparent.

In following my improved procedure, the spun rayon yarn is first wound upon a spinning spool of relatively light weight, which spinning spool is supported upon a reinforcing shell adapted to support it during the treatment to which it is subjected after precipitation. This improved spinning spool may be of cheaper and lighter material since it does not require the strength and resistance which is necessary to resist the mechanical treatment to which it is subjected during the spinning, washing and other treating operations. It is preferred to use a spool of smaller diameter than the smallest now used in the rayon industry, that is, smaller than 7 centimeters, and it may be strengthened by having rims at each end to reinforce its borders. These spools or spinning shells may be made of lighter material, such as parchment paper, pressed paper, impregnated paper, thin aluminum sheets, etc. and if desired they may be perforated in order that more thorough washing of the strands may be accomplished.

In order to reinforce the spinning spools or shells during the spinning, washing, after treatment and drying, they are mounted upon removable reinforcements which strengthen the spools from the inside. These reinforcements may be in the form of shells of conical shape to fit within conical spinning spools. These interior reinforcements should be of suitable material to resist the solutions to which they are to be subjected and may be, for example, of hard rubber, aluminum, etc. It is preferable, in some cases, to also perforate this reinforcement member to correspond with the perforated spinning spool. The reinforcement members should be provided at their ends with suitable arrangements for attaching them to the well-known heads of spinning machines and to the connections upon racks and other apparatus for washing and after-treating the yarn.

In order that the inner reinforcements may be more easily removed, especially if it has a shell-like form, after spinning, washing and after treatment, it has been found advantageous to place between the inner and outer shell an intermediary layer of compressible material, such as fabric of metallic or non-metallic threads. This fabric may comprise a textile cloth or net or other similar upholstery material and may be of bag or hose-like form so that it may be conveniently drawn over the reinforcing member. It will also be of assistance in removing the two concentric shells from one another to give the spinning shell a slightly conical form and to give the supporting reinforcing member and intermediate layers a similar form.

Where it is desired to draw liquid through the threads wound upon the spinning spool, the ends of the perforated reinforcing shell may be closed except for a suitable outlet for the liquid. With such a construction one end of the perforated spinning shell may also be closed.

In the accompanying drawing three constructional examples of the invention are shown.

Fig. 1 shows in section a thread coil, which is spun on a light spinning bobbin, in accordance with the invention and which bobbin is mounted on a reinforcing spool.

Fig. 2 shows the reinforcing spool in section.

Fig. 3 shows the light, perforated spool in section.

Fig. 4 shows another type of the invention in side view and partly in section.

Fig. 5 is a section of Fig. 4.

Fig. 6 shows a type with a conical, not perforated reinforcing spool.

Fig. 1 shows a perforated reinforced speel 1 with a pipe shaped extension 2, which is used for placing the reinforced spool on the spool spindle 14 of the artificial silk spinning machine, whereby it can be fastened to the spool spindle by the screw 15 indicated in the figure and which serves also as a flow pipe for the washing and further

treatment liquids, if the spinning material 4 wound on the auxiliary spool 3 is subjected to the washing and further treatment processes. Fig. 2 shows the reinforcing spool together with the pipe shaped extension 2, Fig. 3 a perforated auxiliary spool 3, which can be pushed over the reinforcing spool 1 according to Fig. 2.

Figures 4 and 5 show the reinforcing spool, on which the shell 6 can be pushed and which can have a handle 7. The real spool 8 according to the invention is placed over this shell and the coil 9 is then placed thereon. The between shell 6, which can, for example, consist of metal or of any other materials, can have a slit on one of the sides as is shown in Fig. 5. The reinforcing spool 5 can also have a lug, which is shown in the drawing so that the shell cannot be moved in a radial direction on the reinforcing spool but can be withdrawn in the axial direction. If this shell is made with spring properties the slit can decrease after the removal of the reinforcing spool 5 and the shell on its part easily removed from the body of the coil.

Fig. 6 shows another type of the invention in which the fabric 11 is applied on a conical reinforced spool 10 as an intermediary layer, over which fabric the shell 12, which can be perforated, is pushed as already described. The freshly spun threads 13 are then wound on this shell. The fabric 11 serving as an intermediary layer and which can consist of a knitted seamless tube, can also be made a sufficient length so that the protruding ends can be bent back over the yarn 13 after the winding has been completed.

What I claim is:

1. A device for receiving freshly precipitated yarn, comprising a support detachably fixed to a rotatable member, a spinning shell of thin, deformable material adapted to contact throughout a substantial portion of its inner surface with said support.

2. In the manufacture of artificial filaments, the steps comprising winding the newly spun cellulosic filaments upon spinning shells while supporting such shells upon a reinforcing member and washing, treating and drying the filaments while so supported and thereafter subjecting the filament to the textile operations after removing the reinforcing member.

3. A device of the type described in claim 1 in which the spinning shell is of a material of the class consisting of pressed paper, parchment paper, impregnated pasteboard and thin aluminum sheets.

4. A device of the type described in claim 1 in which the spinning shell and reinforcement for the shell are perforated.

5. A device of the type described in claim 1 in which the spinning shell and reinforcement for the shell each have the form of a frustum of a cone.

6. A device of the type described in claim 1 in which the spinning shell is provided with strengthening rims or flanges at each end.

7. A device of the type described in claim 1 in which the reinforcement for the shell is adapted to be supported upon ordinary supports and upon apparatus used in the subsequent treatment of the yarns.

8. A device of the type described in claim 1 in which the spinning shell and reinforcement for the shell are separated by a layer of compressible material.

9. A device of the type described in claim 1 in which the spinning shell and reinforcement for the shell are separated by a cloth of textile fabric.

10. In the manufacture of artificial filaments, the steps defined in claim 1 including the application of a compressible material to the support before applying the spinning shell to it.

11. A device of the type defined in claim 1 in which a compressible material is placed between the support and the spinning shell.

12. A device of the type defined in claim 1 in which material is placed between the support and the spinning shell, said material being provided with a handle portion adjacent one end thereof.

13. A device of the type defined in claim 1 in which the support is a hollow receptacle closed at both ends and perforated in the surface adapted to contact with the spinning shell and a hollow tube at the center of one end communicating with the interior of the receptacle and provided with means for attaching the tube to a spindle and in which the spinning shell has perforations registering with those in the support.

14. A device of the type described in claim 1 in which the spinning shell and reinforcement for the shell are separated by a textile fabric having ends adapted to be wrapped over the ends of the spun yarn.

15. A device for receiving freshly spun yarn and supporting it during subsequent treatment, comprising a spinning shell of relatively thin material and a removable reinforcement for supporting the shell, said shell and reinforcement being separated by a cloth of metal thread.

CONRAD HERRMANN.