

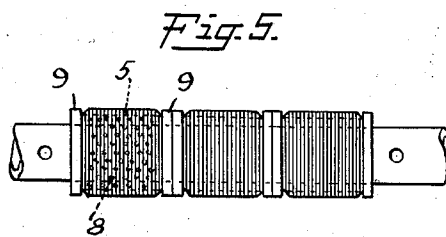
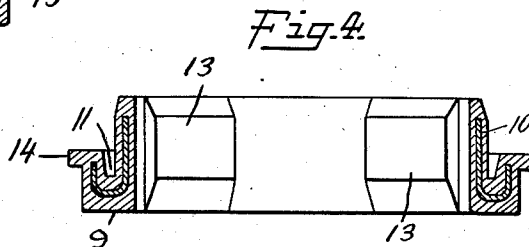
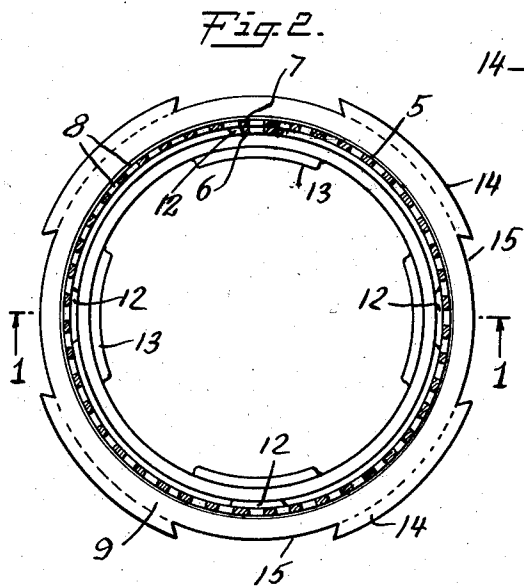
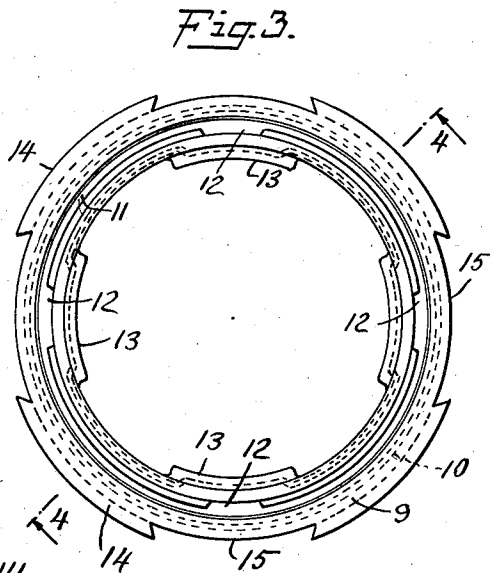
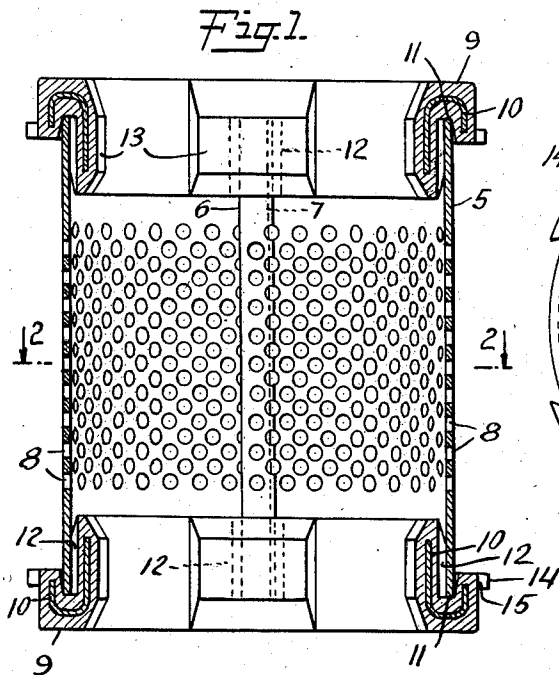
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BOBBIN

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BOBBIN

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This invention relates to bobbins adapted for use in the production of artificial silk commonly known as "rayon" and particularly to improvements in collapsible bobbins whereby the bobbin is maintained in the desired shape and dimensions and leakage of liquids is avoided.

In the production of artificial silk, it is customary to wind and support the thread or yarn before and during twisting and subsequent operations such as denitration, desulphurization and the like, on bobbins. When the treatment is concluded and the cake is permitted to dry, shrinkage occurs and consequently it is undesirable at that stage to maintain the dimensions of the bobbin. Split bobbins have been used, therefore, which permit partial collapse and prevention of undue stress on the shrinking yarn. Such collapsible bobbins, however, require firm support in the earlier stages of the procedure to maintain the required dimensions and to prevent leakage of the solutions employed in the treatment of the yarn.

It is the object of the present invention to provide an improved bobbin and particularly a split bobbin having separable end rings or gaskets designed to maintain the bobbin in its required dimensions and to be removed prior to drying so that the bobbin can collapse.

Other objects and advantages of the invention will be apparent as it is better understood by reference to the following specification and accompanying drawing, in which

Fig. 1 is a longitudinal section through the bobbin with the end rings or gaskets secured in place;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is an end elevation of one of the gaskets;

Fig. 4 is a transverse section through the gasket; and

Fig. 5 is an elevation indicating a number of the bobbins supported on a spindle for treatment of the cakes which are wound upon the bobbins.

Referring to the drawing, 5 indicates the shell of the bobbin which may be of any suitable material capable of withstanding chemical reagents such as are employed in denitration, desulphurizing and the like. Pure aluminum is a satisfactory material, but other metals and non-metallic materials may be utilized. The shell 5 is split longitudinally and is provided with an overlapping edge 6 adapted to underlie the edge 7, forming a cylinder of the desired dimensions. The bobbin is perforated about its periphery, as indicated at 8, the perforations being spaced from the lateral edges of the cylinder. The object of the perforations is to permit the passage of liquids employed

in treating the wound yarn or cake which is disposed upon the bobbin so as to overlie the perforations.

The bobbin is completed by two end rings or gaskets 9, which are slipped over the free edges of the cylindrical portion forming closures therefor, and adapted to hold the cylindrical portions in the predetermined and desired dimensions. These end rings or gaskets may be made of any suitable material capable of withstanding the action of chemical reagents employed in the treatment of the yarn. We prefer to employ soft rubber molded in the desired form and provided with a reinforcement 10 of steel or other suitable material embedded in the rubber.

The rings or gaskets are formed with a slot 11 adapted to receive the edges of the cylindrical portion of the bobbin. Four recesses 12 are provided in the slot to accommodate the thickened portion of the bobbin where the two edges overlap. Obviously, a single recess would serve this purpose, but for convenience in assembling four may be provided.

On the inner periphery of each of the gaskets or rings, four lugs 13 are formed and are adapted to engage a spindle or holder, such as that indicated in Fig. 5, for the purpose of centering the bobbins upon the spindle or holder. The space between the lugs affords a passage for liquids between adjacent bobbins, so that such liquids may flow through the openings in the bobbins and through the cake disposed thereon. Thus when the bobbins are arranged upon a spindle in apparatus for denitration or desulphurizing, the desired chemical reagents may travel in either direction through the bobbins and through the spaces indicated interiorly of the bobbins.

At the outer peripheries of each of the gaskets or rings, a plurality of snag lugs 14 are formed with V-shaped recesses 15 which are adapted to receive the end of a thread when the latter is thrown over the rim. The snag lugs catch and hold such threads and cause them to be wound upon the bobbin, thus facilitating the operation in starting to wind the thread or yarn on the bobbin, or continuing the winding when a thread is broken.

It will be understood from the foregoing description that the bobbins are prepared by assembling the gaskets or end rings with the cylindrical portion and that when so assembled the end rings or gaskets close the ends of the bobbin and likewise seal the joints formed by the overlapping edges beyond the openings which occupy the center of the bobbin. Thus leakage is pre-

vented and liquids are directed through the bobbins and the cakes thereon when the bobbins are assembled on the spindles. The bobbins may be clamped on the spindles by any suitable means, and when drawn closely together the gaskets or end rings abutting each other prevent leakage between the bobbins.

When the bobbins have been assembled in the manner described, they may be utilized in winding thread or yarn, in twisting the yarn, and in the subsequent treatment thereof with suitable chemical reagents such as those employed in denitration, desulphurization, and the like. In all of these operations, the thread or yarn is wet and no shrinkage occurs. After the cake has been finally washed and is to be subjected to drying, the end gaskets or rings are separated from the cylindrical portions of the bobbins. The cylindrical portions are then free to contract by sliding of the overlapping edges. Consequently the yarn in drying and in shrinking is not subjected to stresses which otherwise would cause stretching of the product. Such stretching is to be avoided because it causes inequalities in the characteristics of the yarn and affects the subsequent treatment such as dyeing and the like.

The invention as described facilitates the production of a uniform product. In those operations which require a firm support, the bobbins afford such a support for the yarn and facilitate the operation also by preventing leakage of the liquids employed. When, however, the necessity for a firm support has passed and it is desirable to collapse the bobbins, the end gaskets or rings can be removed readily, thus freeing the cylindrical portions of the bobbins on which the yarn is wound.

Various changes may be made in the form, construction and arrangement of the parts without departing from the invention or sacrificing any of the advantages thereof.

I claim:

1. A bobbin comprising a cylindrical shell split longitudinally and having edges adapted to overlap and form a joint, one of the edges being depressed to lie within the inner periphery of the contiguous edge, and detachable end rings having slots to receive the lateral edges of the shell with recesses to accommodate the overlapping portions of the edges.

2. A bobbin comprising a cylindrical shell split longitudinally and having edges adapted to overlap and form a joint, detachable end rings to hold the shell in predetermined shape and dimensions, and spacing lugs on the interior peripheries of the end rings.

3. A bobbin comprising a cylindrical shell split longitudinally and having edges adapted to overlap and form a joint, detachable end rings to hold the shell in predetermined shape and dimensions, and snag lugs on the outer peripheries of the end rings.

4. A bobbin comprising a cylindrical shell split longitudinally and having edges adapted to overlap and form a joint, one of the edges being depressed to lie within the inner periphery of the contiguous edge, detachable end rings having slots to receive the lateral edges of the shell with recesses to accommodate the overlapping portions of the edges, and spacing lugs on the interior peripheries of the end rings.

5. A bobbin comprising a cylindrical shell split longitudinally and having edges adapted to overlap and form a joint, one of the edges being depressed to lie within the inner periphery of the contiguous edge, detachable end rings having slots to receive the lateral edges of the shell with recesses to accommodate the overlapping portions of the edges, and snag lugs on the outer peripheries of the end rings.

6. A bobbin comprising a cylindrical shell split longitudinally and having edges adapted to overlap and form a joint, detachable end rings of rubber having slots to receive the lateral edges of the shell, and recesses to accommodate the overlapping portions of the edges.

7. A bobbin comprising a cylindrical shell split longitudinally and having edges adapted to overlap and form a joint, detachable end rings of rubber having slots to receive the lateral edges of the shell, recesses to accommodate the overlapping portions of the edges, and spacing lugs on the interior peripheries of the end rings.

8. A bobbin comprising a cylindrical shell split longitudinally and having edges adapted to overlap and form a joint, detachable end rings of rubber having slots to receive the lateral edges of the shell, recesses to accommodate the overlapping portions of the edges, and snag lugs on the outer peripheries of the end rings.

9. A bobbin comprising a cylindrical shell split longitudinally and having edges adapted to overlap and form a joint, detachable end rings of rubber having metal reinforcement and slots to receive the lateral edges of the shell, and recesses to accommodate the overlapping portions of the edges.

10. A bobbin comprising a cylindrical shell split longitudinally and having edges adapted to overlap and form a joint, detachable end rings of rubber having metal reinforcement and slots to receive the lateral edges of the shell, recesses to accommodate the overlapping portions of the edges, and spacing lugs on the interior peripheries of the end rings.

11. A bobbin comprising a cylindrical shell split longitudinally and having edges adapted to overlap and form a joint, detachable end rings of rubber having metal reinforcement and slots to receive the lateral edges of the shell, recesses to accommodate the overlapping portions of the edges, and snag lugs on the outer peripheries of the end rings.

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