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2,689,192

PROCESS OF TREATING YARN CAKE

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FIG.1.

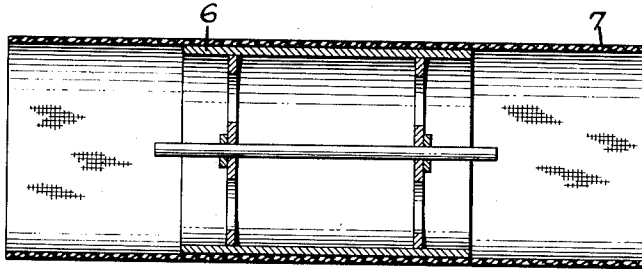


FIG.2.

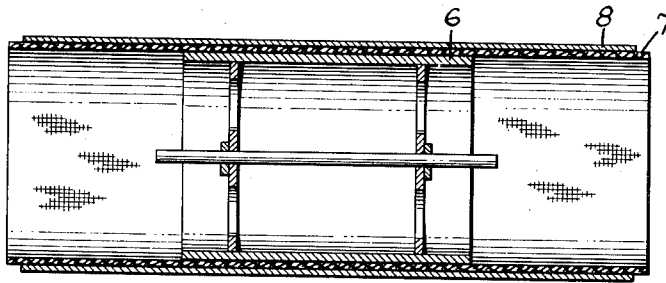


FIG.3.

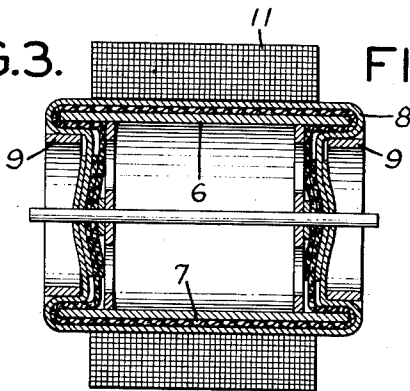


FIG.4.

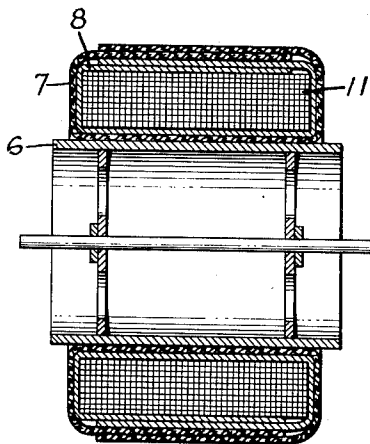
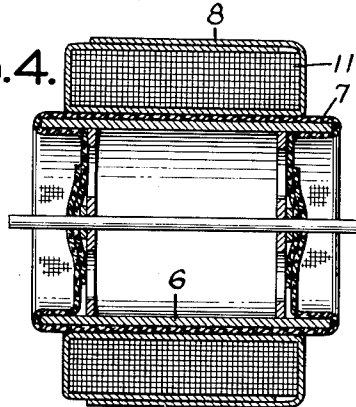


FIG.5.

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PROCESS OF TREATING YARN CAKE

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3 Claims. (Cl. 117-48)

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This invention relates to the treatment of artificial yarn, and relates more particularly to a novel method of processing and handling yarn packages.

In the production of artificial yarn, a solution of filament-forming material such as viscose, for example, is extruded through suitable apertures through a setting medium and the filaments which are formed by either the bobbin or centrifugal process are twisted and collected in the form of a compact annular winding known as a "cake." In the bobbin process, the cake is formed on a generally hollow, cylindrical core which serves as a take-up element on an uptwisting machine; in the centrifugal process, the cake is formed by collecting the filaments on an interior wall of a centrifuge known as a "Topham box" or "spinning pot."

In the form of cakes prepared in accordance with either the bobbin process or the centrifugal process, the yarn packages may be advantageously used in textile operations, such as cone winding, throwing, package dyeing, quilling, etc. However, to prepare the yarn cakes for these uses, they must first be subjected to various wet processing and drying treatments. The bobbin process cakes, for example, must be stripped from the core or mandrel upon which they have been wound, soaked in hot water or a hot aqueous emulsion of a surface lubricant, drained, centrifuged, and dried, in supported state. The centrifugal process cakes must be washed to remove adhering acid and salts, treated with an agent capable of dissolving out liberated particles of sulfur, rewashed, optionally bleached, rewashed, soaped, centrifuged and dried.

In order to prevent the windings of the yarn cakes from being damaged or deranged as a result of the handling involved in these operations and as a result of the liquid treatments themselves, the practice has been generally adopted of encasing each yarn cake before the liquid treating operation or operations in a suitable flexible, permeable protective covering.

For some years, tubular knit fabric of cotton or rayon yarns was the preferred material employed in the protective covering. The lengths of tubular knit fabric covering the cakes usually referred to in the artificial yarn industry as "socks," remain on the yarn cakes when they are shipped to the customers. Usually a nominal charge reflecting the value of the socks is included in the invoice, the customer redeeming the charge by returning the socks in good condition. It will be seen, therefore, that a con-

siderable cost attends the collecting, storing, counting, record-keeping, packing, shipping, etc. of the fabric socks. Accordingly, the use of a protective cover comprising some material which is so cheap that it is disposable and non-returnable has long been the desideratum in the artificial yarn art. To this end, it has been proposed to use a cake cover made of paper characterized by having a high degree of toughness, especially when wet, a high degree of permeability to fluids, and at the same time being relatively inexpensive. Many attempts have been made to obtain such a paper; however, no such paper has been prepared which is capable of withstanding the handlings and wet treatments, especially in the rayon manufacturer's plant without serious frequency of tearing and splitting.

It is an important object of my invention to provide a novel method of processing and handling yarn cakes whereby danger of damage or deranging of yarn windings is minimized.

Another object of my invention is a novel method of processing and handling of yarn cakes wherein a plurality of yarn covers is employed.

Other objects of this invention will appear from the following detailed description and claims.

In accordance with my invention, I employ a paper cover for encasing a yarn cake which is destined to be sold in the market, which paper cover is suitably protected during the wet process, centrifuged and drying treatments in the rayon manufacturer's plant by covering said paper cover with a textile fabric sock. The novel method of covering a yarn cake in accordance with my invention, whereby the yarn windings are protected against damage and derangement by a paper cover and the paper cover in turn is protected against tearing and splitting, will be described in connection with the accompanying drawings wherein the bobbin process is shown, but it will be understood by those familiar with the art that the principle involved is applicable to the handling and processing of yarn cakes formed by the centrifugal process.

In the drawings,

Fig. 1 is a cross-sectional view showing a fabric sock drawn over the core or mandrel of a twisting and winding device,

Fig. 2 is a cross-sectional view showing a paper cover superimposed on the fabric sock,

Fig. 3 is a cross-sectional view showing the ends of a paper cover and the fabric sock tucked in the ends of the core or mandrel and the position of the yarn windings thereon,

Fig. 4 is a cross-sectional view showing the

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paper cover removed from the ends of the core or mandrel and wrapped around the yarn cake, and

Fig. 5 is a cross-sectional view showing the fabric sock removed from the ends of the core or mandrel and wrapped around the paper covered yarn cake, preparatory to removing the yarn cake from the core or mandrel for the processing thereof.

Like reference numerals indicate like parts throughout the several views of the drawings.

Referring now to the drawings, it will be seen that the core or mandrel 6 has drawn over the surface thereof a fabric sleeve or sock 7. After the sleeve 7 has been suitably positioned on the core or mandrel 6, there is drawn over the sleeve 7 a paper sleeve or cover 8. The ends of the fabric sleeve 7 and paper sleeve 8 are then tucked within the opened ends of the core or mandrel 6 as shown in Fig. 3 and are held therein by a circular band 9. The covered core or mandrel is then placed in a twisting and winding device of any suitable design, not shown, where yarn is wound thereon to form the yarn package or cake 11.

When the yarn cake has reached the desired diameter, the tucked-in portions of the paper sleeve are removed from the ends of the core or mandrel and folded over the yarn cake as shown in Fig. 4. Then the tucked-in portions of the fabric sleeve are removed from the ends of the twisting arbor 6 and folded over the yarn cake in such a manner as to protect the paper cover, as shown in Fig. 5. The yarn cake 11 encased within its paper cover which latter is now protected by the yarn sock is slipped off the core or mandrel and is ready for handling and processing.

After the process and drying treatments have been completed, the fabric sock is removed from the yarn cake and the yarn cake now covered merely by the paper cover is stored or shipped as the rayon manufacturer may desire. The paper cover having been protected by the fabric sock is free from tears, splits and abrasions and makes an ideal cover for protecting the yarn cake during handling for storage or shipping.

It is to be understood that the foregoing detailed description is given merely by way of illus-

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tration and that many variations may be made therein without departing from the spirit of my invention.

Having described my invention, what I desire to secure by Letters Patent is:

1. In a process of treating yarn cakes wherein the yarn cakes are subjected to wet processing and drying treatments, the step of enclosing each yarn cake, prior to the said wet processing and drying treatments, within two coverings, the inner one of which is of flexible paper permeable to fluids and the outer one is of a textile fabric, and then removing the outer textile fabric cover after the wet processing and drying treatments and prior to storing or shipping.

2. In a process for preparing yarn cakes, the steps which comprise winding yarn into the form of a cake on a yarn support having a plurality of surfaces thereon, covering the yarn cake first with one cover and then with another cover, the inner one of which is of flexible paper permeable to fluids and the outer one is of a textile fabric, slipping the covered yarn cake from the yarn support, subjecting the yarn cake to wet processing and drying treatments, and then removing the outer cover from the yarn cake leaving the yarn cake covered by the inner cover.

3. In a process for treating yarn cakes wherein the yarn cakes are subjected to a wet processing treatment, the step of enclosing each yarn cake prior to the said wet processing treatment within two coverings, the inner one of which is of flexible paper permeable to fluids and the outer one is of a textile fabric, and then removing the outer textile fabric cover after the wet processing treatment and prior to storing or shipping, leaving the yarn cake covered by the inner cover.

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