This application is a division of my application, Serial No. 422,467, filed January 21, 1930.

An important object of the present invention is to provide apparatus for bringing artificial silk from the cake form to which it is spun in spinning cans or centrifuges, and in which it has undergone the necessary wet treatment and drying, directly into the wound form required by the textile industry, that is without rewinding the silk or reducing it to hank or skein form, at the same time, however, avoiding damage to the silk and eliminating other deficiencies which have arisen in practice in carrying out prior proposals.

A further important object of this invention is to provide for the introduction directly into woven or knitted material, with a minimum of waste and labour, of spun-cakes produced and completely treated according to the centrifuge or can spinning process.

In the accompanying drawing:

Figure 1 is a diagrammatic view representing the working of artificial filament from a spun cake with the aid of apparatus in accordance with this invention.

Figure 2 is a central sectional elevation of a spun cake fitted with a perforated sleeve and support.

Figure 3 is a similar view showing the support applied to a base and fitted with a cover.

Figure 4 is a like view showing a cap and enclosing carton for protection of the cake and appurtenant parts in transportation.

Figure 5 is a part-sectional view illustrating modifications.

Figure 6 is a part-sectional elevation corresponding to Figure 5 and showing, in addition, perforations provided in the base for drying purposes.

Figure 7 shows the ensemble of Figure 5 with a cap and carton for transportation.

Figure 1 illustrates how a bundle of capillary threads a from the cake c, which is on the perforated sleeve or support b, may be run through a thread guide and a tensioning device e to cleaning devices d and f and thence to a bobbin or other winding device k such as is required for the textile industry.

The thread is cleaned and examined millimetre by millimetre for thread-thickness by the cleaning device d (Figure 1), which consists of hairy material, and by the device f, in the form of an eyelet or an adjustable slit. If, in a single bobbin being wound, there prove to be several irregularities, then the bobbin in question belongs to an inferior quality. Naturally these cleaning devices can also be introduced when the thread is made to run directly from the cake into a weaving loom or other textile machine. If a special preparation, such as an oil, has to be applied to the thread, this is effected in a simple manner by also introducing an oiling device g (Figure 1) in the path of the thread.

If the spun cakes are treated, in accordance with the applicant’s French patent specification No. 661,781, with the aid of the perforated compressible sleeve m, and the cakes so treated are dried by hanging them with the sleeves upon drying rods, then it is readily possible that the edge-threads may slip down from the perforated sleeve m and become damaged. This is prevented in accordance with this invention by inserting a second, likewise elastic, sleeve o. (Figure 2), herein called a support or support sleeve, which projects from the cake at both ends, in the interior of the perforated sleeve m. This support or support sleeve is inserted after the performance of the wet-treatment, the cake having been removed from the spinning pot. Any threads then falling away from the edges are held up by this sleeve o and saved from damage. The cake with the projecting sleeve o is then, as illustrated in Figure 3, placed on a base p the diameter of which is somewhat larger than that of the cake and which is provided with a recess to receive the part of the sleeve o projecting from the lower edge of the cake. The base itself is provided with a level soft covering of felt, plush, skin or the like which abuts flat against the adjacent lower end of the cake in order that the threads shall not be able to catch between the cake and base and thus tear. The recess in the base is of suitably large diameter to allow for insertion of the sleeve o therein irrespective of the varying internal diameters of the cakes met with in practice. The upper end of the sleeve o is provided with a cover t having polished edges in order that the threads, in running off the cake, shall not be damaged upon the sharp edge of the sleeve o. As shown in Figure 3, the formation of the cover t, with its projecting edge resting upon the support m, is such that it will adapt itself to the support irrespective of the varying internal diameter of the latter. The cake so provided can be placed direct on to weaving looms or the like and can there be worked up to woven fabric or the like.

In order that the cakes shall not be damaged during transportation to the weaving and knitting establishments, the cover t is replaced by a cap u (Figure 4) similar to the base p. This
cap may also be lined with soft material. The cake so provided may be even sent by post in cartons (Figure 4) without the threads being damaged. The package comprising the cake, its sleeves, base and cap are introduced into the carton in vertical fashion so that the thread layers of the cake shall not be disturbed, and the carton encloses the package with slight clearance sufficient only for packing so that the package shall not move about unduly.

In place of the base in accordance with Figure 4, use may advantageously also be made of a base in accordance with Figure 5. This base \( \omega \) has no recess but is plane and is likewise covered with soft material \( \gamma \). Upon this base, a combined cake tensioning and mounting device comprising the sleeve \( \sigma \) and the angle-piece \( \alpha \) is secured in such a manner that the sleeve projects somewhat from the cake \( \eta \) at its upper end. The cover \( t \) of Figure 3 and the cap \( \nu \) of Figure 4 may be used in this case also for the unwinding and transportation respectively. Owing to the attachment of the sleeve \( \sigma \) by means of the angle-piece \( \alpha \), lateral displacement of the cake upon the base and consequent misplacement of the thread upon the base are avoided. The base \( \varphi \) or \( \omega \) may be provided with holes such as \( z \) (Figure 6) to permit better access of the air to all parts of the thread layers when the cake is dried standing upon such base.

I claim:

1. Apparatus for use in the transportation and working off of spun cakes of artificial fibrous material produced by the centrifuge spinning process, comprising a perforated sleeve adapted to fit closely within an already formed cake, a cake base having a level surface on which one end of the cake rests flat, and a combined cake tensioning and mounting device adapted to tension the cake from the inside and to be engaged fixedly with said base to prevent displacement of said cake on the base.

2. Apparatus for use in the transportation and working off of spun cakes of artificial fibrous material produced by the centrifuge spinning process, comprising a perforated sleeve adapted to fit closely within an already formed cake, a plane base for the entire surface of one end of the cake and a combined cake tensioning and mounting device adapted to tension the cake from the inside and to be engaged fixedly with said base to prevent displacement of said cake on the base.

3. Apparatus for use in the transportation and working off of spun cakes of artificial fibrous material produced by the centrifuge spinning process, comprising a perforated sleeve adapted to fit closely within an already formed cake, a plane base for the entire surface of one end of the cake, a soft covering on said base, and a combined cake tensioning and mounting device adapted to tension the cake from the inside and to be engaged fixedly with said base to prevent displacement of said cake on the base.

4. Apparatus for use in the transportation and working off of spun cakes of artificial fibrous material produced by the centrifuge spinning process, comprising a perforated sleeve adapted to fit closely within an already formed cake, a cake base having a level surface on which one end of the cake rests flat, and a combined cake tensioning and mounting device adapted to tension the cake from the inside and to be engaged fixedly with said base to prevent displacement of said cake on the base and extending above the upper edge of the cake to prevent loose threads from becoming displaced into the same.

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