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PROCESS FOR THE SIZING OF RAYON SPINNING CAKES

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8 Claims. (Cl. 18—54)

No definite proposals seem to have been made till now, for the sizing of rayon spinning cakes to be used directly on textile machinery. The process described hereafter sets forth our idea of how spinning cakes, as manufactured by the viscose and copper-ammonia process may be sized. This sized yarn can then be used directly on textile machines, such as knitting machines, circular knitting machines, hosiery machines, creels, doubling machines, etc., or on other kinds of textile machines. In order to effect a certain adhesion of the single filaments in the thread bundle, such sizing materials are used which contain drying oils. The drying oil effects the adhesion of the single filaments after the diluent has been removed, without, however, causing an injurious agglutination of the spinning cake itself.

According to a special form of the process the sizing may only then be effected after the rayon thread has first been dried. The spinning cake may be stored in any desired way during the sizing process but tests have shown that the best results are obtained if the spinning cake is maintained in upright position and supported uniformly on its entire length during the sizing process.

It is not likely that the form of the cake will be damaged in this way and at the same time the sizing will be more uniform when the cake is given uniform support. The cake may be well, uniformly and advantageously supported by wrapping it in a permeable cloth or net-like cover during the sizing process. For this purpose rayon woven covers in the form of hose may be used to advantage, and into which the spinning cake may be placed after which the ends are inverted, thus forming a ring-like packing. It has also been found that the wrapped cakes may be sized by placing them upon reel- or spool-like supporting devices which may be dilated or enlarged, and which, at the same time, hold the cake tightly from the inside. Such spools must be suitable for expansion and must be perforated. Furthermore, it has been found that a good sizing treatment may be accomplished by inserting the spinning cakes, during the sizing process, into corresponding small and suitably perforated centrifuges having a conical axle into which the sizing solution is poured and from which the surplus of the sizing solution is removed through the centrifugal force. Furthermore, the yarn may be subjected to the sizing liquids by letting the liquids drip on the material or by spraying it. The sizing solution or diluent may be dried out of the yarn while the cakes are still wrapped in the net-like covers. Furthermore, the cakes may even be dried out while they are still spread over the reel- or spool-like supporting arrangements, or while they are still in the spinning pot-like centrifuge. The most suitable centrifuges for this purpose are the usual spinning pots of a corresponding size.

The best suited sizing liquids are emulsions of drying oils or also solutions of drying oils in organic liquids. Such drying oils may be, for example, linseed oil, hempseed oil, or wood oil. The organic liquids to be used may be, for example, benzene, carbon tetrachloride and similar halogenated hydrocarbons, and other easily evaporated solvents suitable for such drying oils. If watery emulsions of oils are used, suitable emulsifiers such as alkylated naphthol derivates should be employed in order to produce the right type of emulsion. The sizing mixtures may also contain larger or smaller quantities of other ingredients, such as waxes, i. e. bees wax, japan wax, earth wax or resins; certain fats, such as talcum, stearin and also glycerin and soaps or paraffin.

After the spinning cakes have been treated with the sizing liquids, the dissolving or emulsifying liquids may be removed by drying in suitable drying chambers if they have not been removed already in the centrifuges.

After the dissolving or emulsifying liquids have been removed from the spinning cakes, the hardening process of the drying oils continues, which completes the final adhesion of the single filaments in the thread bundle. This last process may be furthered by aerating the spinning cakes, for instance by using a slight ozone treatment, or by helping the linseed oil to dry more quickly through boiling or by the addition of siccatives. In those cases where volatile solvents are used, it may be preferable to enclose the sizing and drying apparatus, and to take necessary measures for regenerating the solvents in the respective cases.

Having now set forth our invention as required by the patent statutes, what we desire to claim is:

1. In a process of sizing rayon spinning cakes in situ without injurious agglutination thereof the steps comprising wrapping the rayon cake in a permeable cloth, applying a drying oil thereto subsequently drying said rayon cake without rewinding.

2. In a process of sizing rayon spinning cakes in situ without injurious agglutination thereof the steps comprising wrapping the rayon cake in a permeable cloth, placing the wrapped cake upon a supporting device, applying a drying oil

to said wrapped and supported cake and subsequently drying said cake without rewinding.

3. In a process of sizing rayon spinning cakes in situ without injurious agglutination thereof the steps comprising wrapping the rayon cake in a permeable cloth, placing the wrapped cake in a centrifuge, applying a drying oil to said wrapped cake and subsequently drying said cake without rewinding.

4. In a process of sizing spinning cakes in situ without injurious agglutination thereof the steps comprising wrapping the rayon cake in a permeable cloth, applying thereto a drying oil diluted with a volatile hydrocarbon, and subsequently drying said cake without rewinding.

5. In a process of sizing rayon spinning cakes in situ without injurious agglutination thereof the steps comprising wrapping the rayon cake in a permeable cloth, applying a drying oil emulsion thereto and subsequently drying said cake without rewinding.

6. In a process of sizing rayon spinning cakes in situ without injurious agglutination thereof the steps comprising wrapping the rayon cake in a permeable cloth, placing the wrapped cake in a centrifuge, applying a drying oil emulsion to said wrapped cake and subsequently drying said cake without rewinding.

7. In a process of sizing rayon spinning cakes in situ without injurious agglutination thereof the steps comprising wrapping the rayon cake in a permeable cloth, placing the wrapped cake in a centrifuge applying a drying oil of the group consisting of linseed oil, hempseed oil and wood oil to said wrapped cake and subsequently drying said cake without rewinding.

8. In a process of sizing rayon spinning cakes in situ without injurious agglutination thereof the steps comprising wrapping the rayon cake in a permeable cloth, placing the wrapped cake in a centrifuge, applying a drying oil in combination with a volatile hydrocarbon and a substance of the group consisting of bees wax, japan wax, earth wax, and paraffine to said wrapped cake and subsequently drying said cake without rewinding.

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