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F. PREYSCH

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PRODUCTION OF COPS IN RING SPINNING AND RING DOUBLING MACHINES

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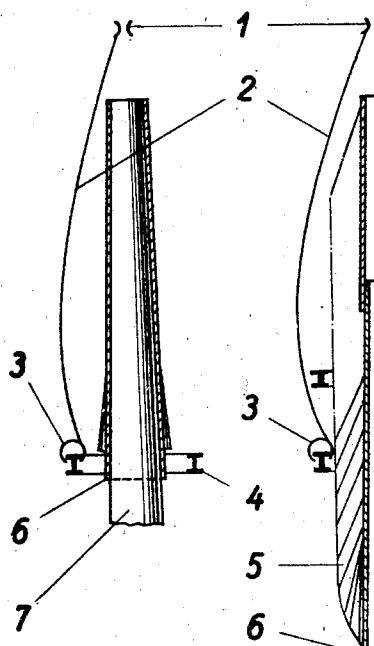


Fig. 1

Fig. 2

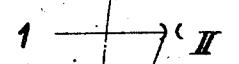
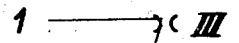
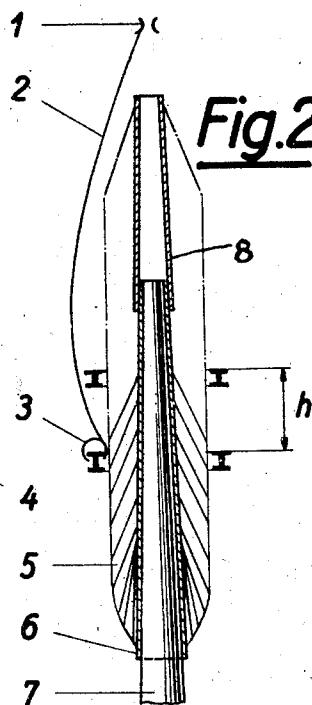


Fig. 4



Fig. 5

Fig. 3

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PRODUCTION OF COPS IN RING SPINNING AND RING DOUBLING MACHINES

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1 Claim. (Cl. 57—75)

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This invention relates to the production of cops in ring spinning machines and in ring doubling machines.

As a matter of fact, large cops are advantageous in comparison to smaller cops in various respects. This holds true, for example, because the periods of idleness of the machine caused by the doffing of the full cops and the doffing of the fresh winding carrier tubes are reduced, which is highly desirable, especially if the spinning of coarse yarns is concerned. Cops containing a large amount of yarn are particularly advantageous in applying the yarn in practise. In connection therewith less time is then required for the doffing operation in reeling, rewinding or in the direct doffing on the warp creel as well. Apart from this, the yarn used contains a lesser number of knotted portions, due to which the working is facilitated particularly in weaving, fancy weaving and knitting so that errors in the goods produced are unlikely to arise.

However, the length of cop cannot be unduly increased even if the cops are produced in ring spinning or ring doubling machines. As soon as the balloon formed in the yarn between the traveler and the thread guide eyelet, in spinning or doubling, has reached a certain length, excessive tensile straining of the thread ensues which may eventually tear the thread. As the balloons on the individual spindles bulge to a considerable extent they require a great amount of space and interfere with each other. By attempting to constrict the balloons by means of heavy travelers the thread tension is increased with the result that fine threads are torn, whereas the capacity to expand and the elasticity of coarse yarns are impaired.

In order to reduce the tendency of the balloons mutually to influence each other, resort may be taken to increasing the spacing of the spindles of the machine. By this means the number of spindles, which otherwise could be provided for the individual machines, that is, the number of spindles that could be installed in a given room would decrease which would very soon make itself felt in an unbearable manner, for economical reasons. Similar conditions are met if rings of a large clear width are used for the purpose of increasing the quantity of yarn contained in the individual cop. Such rings also require the spacing of the spindles of the machine to be relatively great. Apart from this, the thickness of the spindle must be increased commensurate with the increase in thread tension arising in winding cops of small diameter, compared with the wind-

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ing by means of small rings, whilst on the other hand the permissible speed of revolution of the spindles decreases as the ring diameter increases. Again, experience has shown that the speed of the traveler relative to the ring must not exceed a certain upper limit. Both factors, namely the speed of revolution of the spindles and the spacing of the spindles of the machine affect the economy of working.

10 With a view to eliminating these drawbacks, in the method according to the present invention for producing cops in ring spinning and ring doubling machines respectively cops of a relatively great length of thread are produced by means of a thread balloon the size of which is smaller than the length of the completely wound cop.

By this means excessive bulging of the balloon is prevented from arising so that the spacing of the spindles can be kept within limits which from 20 the point of view of economy are permissible. Furthermore, the setting up of undue thread tensions can be avoided and on the other hand the employment of traveler rings of small diameter permits of using high speeds of revolution so that the efficiency of working can be increased.

25 Appropriate means for carrying out the method according to the present invention and also forming part of said invention are illustrated, by way of example only, in longitudinal sections, in the accompanying drawings in which

30 Figs. 1 and 2 serve for explaining a first exemplification;

35 Figs. 3 and 4 serve for explaining a second exemplification, and

Fig. 5 is a view of a further exemplification.

From a thread guide eyelet 1 to the traveler 3 the thread 2 forms a balloon during the spinning or doubling operation. The traveler 3 slides on the traveler ring 4 and is continuously vertically reciprocated for a stretch h (Fig. 2) during the cop building operation by means of a conventional traveler ring rail (not shown). From the traveler 3 the thread is guided for building the thread package, that is, the cop 5 to a thread carrier sleeve 6. The sleeve 6 which is made, for example, of paper, an artificial pressed material, light metal or the like is attached to the top portion of the spindle 7.

40 As will be seen from Figs. 1 and 2 the spindle moves downwardly commensurate with the growth of the cop. When the cop 5 has reached a certain length, a tubular extension 8, Fig. 2, of an appropriate rigidity, which is made of the same material as said sleeve or of a material similar thereto, is placed on the sleeve 6 for pre-

venting the latter from being constricted by the tensioned thread. Thereupon the spindle 7 keeps on lowering together with the sleeves 6 and 8 far down enough that the cop is given a size as shown in chain-dotted lines in Fig. 2.

The length of the balloon formed in the thread 2 between the eyelet 1 and the traveler 3 remains constant at all times and is shorter than it would be if at the beginning of the winding operation a single sleeve of a length substantially equaling the length of the combined sleeves 6 and 8 had been used, or, in other words, the length of the balloon in the thread is at all times shorter than the length of the completely wound cop which contains a quantity of yarn which corresponds with its increased length.

In Figs. 3 and 4 the application of the present method to a ring spinning or ring doubling machine respectively is illustrated in which the spindles are not moved in the vertical direction. The cop building operation is so effected that the traveler 4 performs a slow upward movement apart from performing a throw *h* as illustrated in Fig. 2. After the cop 5 has reached a length substantially equal to two-thirds the length of sleeve 6, as shown in solid lines in Fig. 4, on the sleeve 6 is placed an extension in the form of a sleeve 8, so that a correspondingly longer winding carrier body is provided.

The thread guide eyelet 1 travels during the cop building operation from position I in Fig. 3 through position II in Fig. 4 up to position III in Fig. 4. Also with this functioning the balloon formed in the thread remains relatively small at all times without ever reaching such size as would obtain if at the beginning of the winding operation a longer sleeve had been used and the balloon formed in the thread extended from the eyelet 1 in the position II of the latter, as shown in Fig. 4, down to the base of the sleeve 6.

In case of necessity several sleeve extensions can be resorted to which are adapted to be telescopically interconnected.

In Fig. 5 the upper edge of the spindle 7 is adapted to receive an extension 9 for the purpose of presenting to a prolongating or accessory sleeve a bearing surface of corresponding length. The upper end of the spindle 7 may, in order to constitute an axial seating for the extension 9, be provided, for example, with a recess for the

reception of a central pin on the said extension 9, whilst a cross cleat 10 serves for locking engagement with the extension 9 for rotating the latter in unison with the spindle 7. By this means the attachment 9 is positively coupled to the spindle 7.

I claim:

Apparatus for winding long lengths of thread into cops of extra length with comparatively small size of balloon during the winding and therefore smaller spacing of winding spindles during winding in combination, a winding spindle, a cop carrier, a thread ring having a traveler, said ring encircling the carrier during the winding operation, said ring and carrier being relatively movable axially, a guide eyelet spaced from the traveler in a generally axial direction, and a carrier extension for attachment to the carrier for supplementing its length when the winding of the cop approaches the finally wound end of the carrier, the distance between said traveler and guide eyelet corresponding substantially to that which would be required for winding the carrier without the extension, whereby the balloon produced between the guide eyelet and traveler is of less width than the width that would be produced if the distance between the guide eyelet and traveler corresponded to that required in winding a carrier of a length equal to the said carrier and its extension whereby the space required for the winding apparatus is less than otherwise required.

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