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SLEEVE FOR ROLLERS

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The present invention relates generally to spinning frames, and is particularly directed to improvements in the drawing rollers thereof.

In spinning frames, it is necessary to obtain strong pressures between the contacting surfaces of the top and bottom rollers and areas of contact between the roller surfaces extending sufficiently both axially and circumferentially so as to make sure that the fibers of the sliver all may undergo the drawing action, during rotation of the contacting rollers. The intermediate rollers of the control zone must exert on the fibers a soft and elastic pressure permitting mutual sliding, while the top or weighted roller and the accompanying bottom roller rotate at the same speeds by reason of the frictional contact therebetween.

The two requirements mentioned above are met by the invention, which provides an elastic sleeve that can be fitted over a cylindrical body, for example, of the top or weighted rollers of a drawing row or of the bottom rollers in textile spinning machines, as a cover therefor, and wherein the wall of the sleeve is substantially spherical and rests on the cylindrical body only towards the ends thereof, so that in the intermediate zone or zones under normal load, said spherical wall tends to flatten against the related bottom roller.

In the accompanying drawing there are illustrated merely by way of example several embodiments of the invention, namely:

Fig. 1 represents a first embodiment partly in section and applied to a top or weighted roller intermediate of the control zone of a spinning machine,

Fig. 2 is an elevational view of one of the rollers of Fig. 1 in contact with a related bottom roller,

Fig. 3 is a sectional view taken along line 3—3 of Fig. 2,

Fig. 4 is a second embodiment applied to a weighted or top roller as above, and

Fig. 5 is an axial sectional view of a third embodiment applied to a weighted or top roller, as above.

With reference to Fig. 1, it will be seen that a rubber sleeve 1 is provided with a wall having a curved profile of substantially constant thickness and with its concave surface facing inwardly towards the metal core 2. The core 2 is of smaller diameter than the cavity of said sleeve along the length of the core covered by the sleeve, while at the right hand end (as viewed in Fig. 1 of the drawing) said core has a thickened portion 5 which defines a shoulder having an axially opening annular groove receiving the related end of the sleeve. On the left hand end 3 of core 2 there is fitted a ring 6 which defines a shoulder having an annular axially opening groove receiving and within the left hand end of the sleeve. Said ring 6 can be tightened towards the shoulder 5, to grip the sleeve, by tightening the nut 7 screwed onto the threaded end 3 of the core. It is apparent that the sleeve 1,

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between its opposite ends, is of generally spherical configuration.

From Figures 2 and 3 it will be seen how the described weighted or top roller cooperates with the underlying related bottom roller 8. The rings 5 and 6 of the upper roller rest on the corresponding metal rings of the bottom roller 8 and are urged against the latter with the necessary pressure so as to develop between the contacting ring surfaces an adherence sufficient to eliminate any relative sliding, while the pressure exerted upon the fiber passed between the top and bottom rollers is that corresponding to the elastic reaction of the sleeve due to its proportions and configuration, the character of the material forming the sleeve and the deformation of the sleeve in the contact zone. The roller embodying the invention is dimensioned so that the sleeve, which is supported at its ends by the metal parts 5 and 6, never comes in contact with the central portion of the core under operating conditions.

The embodiment of Figure 4 differs from the preceding embodiment in that the metal core has integral therewith two lateral shoulders 5—6', with the sleeve being inserted therebetween.

The embodiment of Figure 5 differs from the embodiment of Fig. 4 in that the sleeve is provided, at its ends, with two radially thickened portions 9 and 10 which fit upon and contact the metal core, so that the middle, spherical portion of the sleeve behaves like an elastic bridge between the thickened portions which serve as bearers and replace the metal shoulders or bearer rims 5 and 6 or 5 and 6' of the above described embodiments.

From the foregoing description of illustrative embodiments of the invention, it is apparent that the weighted or top rollers having substantially spherical surfaces in accordance therewith provide substantially large zones of contact in the circumferential direction as represented by the angle shown in Fig. 3, and that considerable contact pressure is always available at the center of the zone of contact, in the axial direction, thereby to ensure proper gripping of the fibers.

While illustrative embodiments of the invention have been shown in the accompanying drawings and described in detail herein, it is to be understood that the invention is not limited to these precise embodiments, and that various changes and modifications may be effected therein without departing from the scope or spirit of the invention as defined in the appended claims.

What I claim is:

1. A drawing roller for use in textile spinning frames comprising a cylindrical body having axially spaced apart cylindrical surfaces thereon and annular, radially outward extending surfaces facing each other at the remote edges of said cylindrical surfaces and disposed at 90 degrees relative to the latter, and a hollow, completely elastic sleeve of generally spherical configuration fitting over said body and having diametrically opposed openings through which the latter extends, the edge portions of said sleeve at said openings having cylindrical inner surfaces and radial end surfaces seating against said cylindrical surfaces and said radial surfaces, respectively, of the body so that said sleeve is supported on said body only at said edge portions and is free to elastically deform therebetween.

2. A drawing roller as in claim 1; wherein said body has radially outward extending rims thereon with annular grooves opening only axially toward each other in the confronting faces of said rims to receive said edge portions of the sleeve and defining said cylindrical and radial surfaces of the body while said rims act as bearers to restrict deformation of said generally spherical elastic sleeve.

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3. A drawing roller as in claim 2; wherein said rims are integral with said body.

4. A drawing roller as in claim 2; wherein one of said rims is integral with said body and the other of said rims is threaded on said body to permit adjustment of the axial distance between said rings for releasing and gripping said edge portions of the sleeve.

5. A drawing roller as in claim 1; wherein said edge portions of the sleeve are relatively thick in the radial direction to support the sleeve on said cylindrical and radial surfaces of the body and said thick edge portions have cylindrical outer surfaces acting as bearer rims to restrict deformation of said spherical sleeve.

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