Dec. 10, 1957 C. J. LE POME 2,815,904

YARN GUIDE

Filed Aug. 31, 1954

Fig. 1

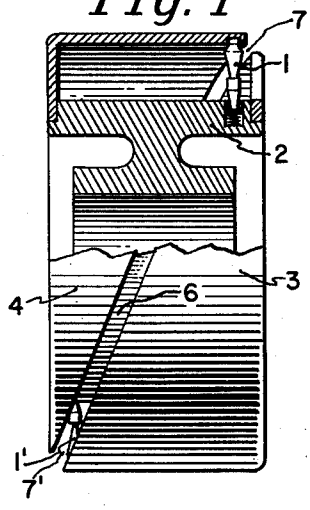


Fig. 2

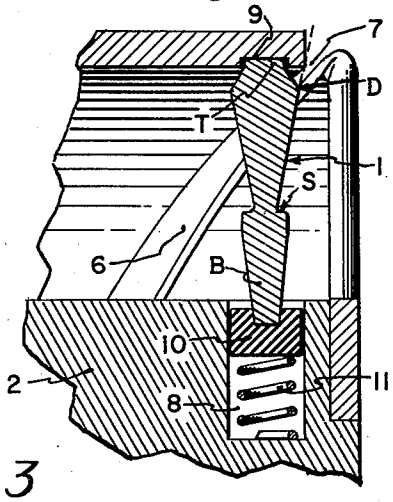


Fig. 3

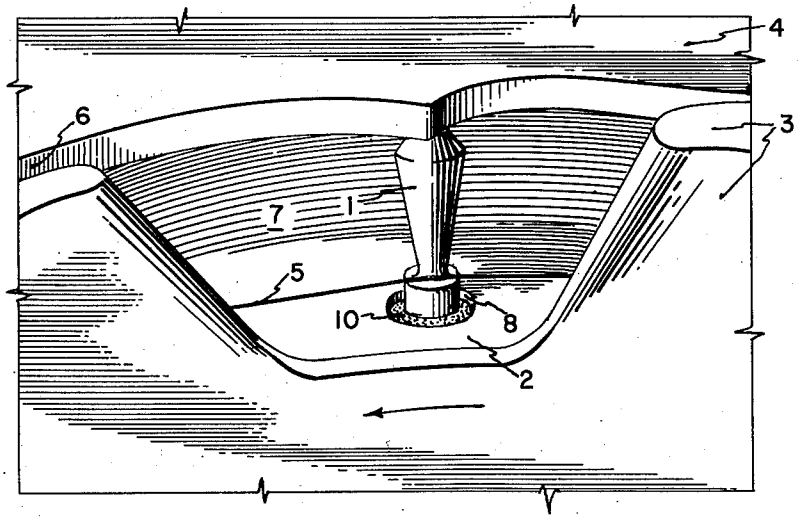
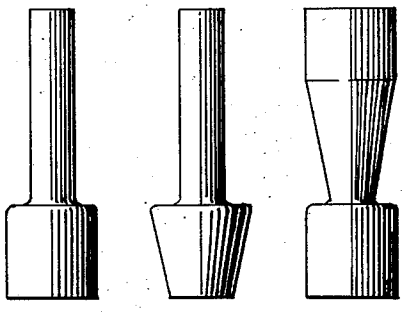


Fig. 4 Fig. 5 Fig. 6



INVENTOR

CHARLES J. LePOME

BY Charles A. McClure

ATTORNEY

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YARN GUIDE

Charles J. LePome, Ayden, N. C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware

Application August 31, 1954, Serial No. 453,315

5 Claims. (Cl. 242—43.2)

This invention relates to yarn-traversing rolls, particularly to guides present in such rolls at the reversal points of the traverse.

Cylindrical rolls having the outer surface grooved or slotted in a generally helical or zig-zag pattern so as to traverse yarn traveling back and forth in the surface groove as the roll rotates are accepted in the textile industry. By frictional contact these rolls also may forward the yarn or even rotate packages upon which it is being wound. Design of such a roll as two hollow concentric shells or sleeves, the outer sleeve being slotted to admit the yarn and the inner sleeve providing a surface to support the yarn, provides manufacturing, handling, and maintenance advantages over solid construction.

Grooved yarn-traversing rolls are subject to wear on the bottom of the groove, especially at the locations where the lateral movement of the yarn reverses, here called "reversal points." At the reversal points of the hollow type of roll a guide is useful in preventing the year from shifting sideways under the outer sleeve, on which it might then catch and abrade or break. The present invention eliminates the aggravation of wear on the inner sleeve by novel construction of such a reversal guide or "pin."

Means of accomplishing this objective and associated improvement in operation of the resulting traversing roll will be apparent from the following description and the accompanying diagrams, in which Figure 1 is a side elevation of a traversing roll according to this invention, with the upper portion sectioned through the top reversal pin; Figure 2 is an enlarged view of a portion of Figure 1 in the vicinity of a reversal point; Figure 3 is a perspective view of the same roll from the end at one of the reversal points; Figures 4, 5 and 6 show in elevation various reversal pins useful according to this invention.

This invention contemplates a yarn guide or reversal pin, located at the inner edge of the groove of a traversing roll at a reversal point thereof, that is characterized by an enlarged portion or "shoulder" effective to hold the yarn out of contact with the portion of the roll forming the groove bottom in the vicinity of the reversal point. In simple form the reversal pin constitutes a stepped cylinder oriented substantially radially on the inside edge of the groove of a traversing roll, the enlarged end or base of the pin contacting the bottom of the groove with the shoulder projecting thereabove, i. e., toward the outside of the roll. The invention comprehends a yarn-traversing roll comprising an inner shell or sleeve and a concentric outer sleeve slotted helically to receive yarn for traversing and a shoulder pin extending between the two sleeves at a reversal point, as described more fully below.

The traversing roll depicted in Figure 1 shows reversal pins and 1 and 1' located at opposite corners of the roll between the outer sleeve and coaxial inner sleeve or hub 2 and contacting both sleeves. The outer sleeve is made up of two like portions 3 and 4 separated by groove 6, as shown most cslaerly in the lower part of Figure 1. The groove or slot erupts to the edge of the roll at areas

7 and 7' in the vicinity of the respective reversal points. The view at the top reversal point appears in enlarged Figure 2, showing details of one way of mounting the pin. The pin rises perpendicularly from hole 8 in the surface of the inner sleeve to terminate in recess 9 in the overhang of the outer sleeve. Grommet 10, U-shaped in cross-section, holds the base of the pin centered in the hole, and spring 11 presses against the bottom of the grommet to force the pin outward, positioning the top of the pin securely in the recess.

The perspective view of the Figure 3, taken from a position opposite a reversal point, shows the pin supporting yarn 5 above the bottom of the groove where it otherwise would ride. The traversing roll rotates in the direction indicated by the arrow. As the roll rotates, the yarn traversed by it contacts the edge of the groove and rides down into and then back up out of the groove. Tension in the yarn forces it sideways against the pin on the inside edge of the grooved path at each reversal point. Shoulder or step S holds the yarn off the groove bottom formed by the surface of the inner sleeve at the reversal point.

The pin configuration illustrated in Figures 1 to 3 is not the only one that can accomplish the desired purpose, other suitable pins appearing in Figures 4, 5 and 6. All these pins have in common a shoulder or increase in diameter to support yarn at same distance from the base or bottom of the pin. For convenience, the pins shown have a round transverse cross-section, which renders azimuthal orientation at the reversal point non-critical; moreover, this permits rotation or reorientation of the pin to present a uniformly smooth surface to the yarn.

As shown most clearly in Figure 2, the pin of Figures 1 to 3 has a maximum diameter D near its top, from which it tapers inwardly both toward base B to form the shoulder and toward top T. The dashed-line extension of the lower taper intersects the point of maximum overhang the pin being thus designed so that the yarn in riding upward and off the pin clears the overhanging. The upper taper is a precautioning design feature particularly useful in preventing yarn entering the groove from snagging between the overhanging and the pin.

In perhaps simplest form a reversal pin useful according to this invention may consist of a stepped cylinder, as shown in Figure 4. Another useful feature, shown in Figure 5 as well as in the pin of the preceding drawings, is a tapered base, which facilitates placement of the pin in the roll. The pin of Figure 6 is another modification that has proved useful; other forms of pin useful according to this invention will come readily to mind.

The materials of construction of traversing rolls may comprise any one or more of various ceramics, steels, or other materials noted for their resistance to abrasive wear, while hardened coatings or inserts made of ceramics or gems may be useful at particular wear points. The pins themselves should be especially wear-resistant, being made conveniently of hard metal alloys, ceramics, or like materials, including that known as "Alsimag" (American Lava Corp.). The pins are usually unitary, although they may be fabricated in two or more pieces, if desired. Members other than the pin customarily are bolted together but may be welded or assembled by other usual means. The reversal pins are removably held, either by a spring (as described) or by a plug of sponge rubber or other resilient material, or they may be threaded or press fit or held by one or more spring clips. The axis of the pin-receiving hole customarily is oriented to position the pin substantially radially. All yarn-contacting surfaces are ground or polished smooth to minimize abrasion. Details of a traversing roll employing a pin guide at the reversal points, though not including pins constructed according to the present invention,

appear in Selby Patent Application Serial No. 334,606, filed February 2, 1953, now Patent 2,736,506, issued February 28, 1956. The pins of the present invention are useful similarly in rolls of other construction, as is evident from description of their design and function.

The claimed invention:

1. Yarn guide having a pin mounted in the groove of a grooved yarn-traversing roll and oriented substantially perpendicular to the bottom of the groove at a reversal point thereof and having a yarn-supporting shoulder in the longitudinal surface of the pin at a location above the bottom of the groove.

2. Yarn-traversing roll having recessed in its outer cylindrical surface a helical groove with at least two reversal points and having at each reversal point a yarn guide having a shoulder formed by an enlargement of the base portion of the guide to support yarn above the bottom of the yarn-receiving groove.

3. In a yarn-traversing roll comprising a cylindrical inner shell and a concentric outer shell helically slotted to admit yarn toward the surface of the inner shell in a path having at least two reversal points, the improvement comprising a radial pin joining the two shells at a reversal point on the inner edge of the path and having

an enlargement in transverse cross-section at a location above the surface of the inner shell and reduction in cross-section thereabove.

4. The pin of claim 3 formed as a stepped cylinder having an enlarged section at the base and a reduced section joining the enlarged section.

5. A yarn-traversing device comprising a grooved yarn-traversing roll having a reversal pin, located on the inside edge of the groove, having a shoulder near its base to support yarn thereon and having an enlarged portion near its top such that a line extended along the plane of the pin surface from just above the shoulder past the enlargement intersects the point of maximum overhang of the roll thereover.

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