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GUIDE MECHANISM

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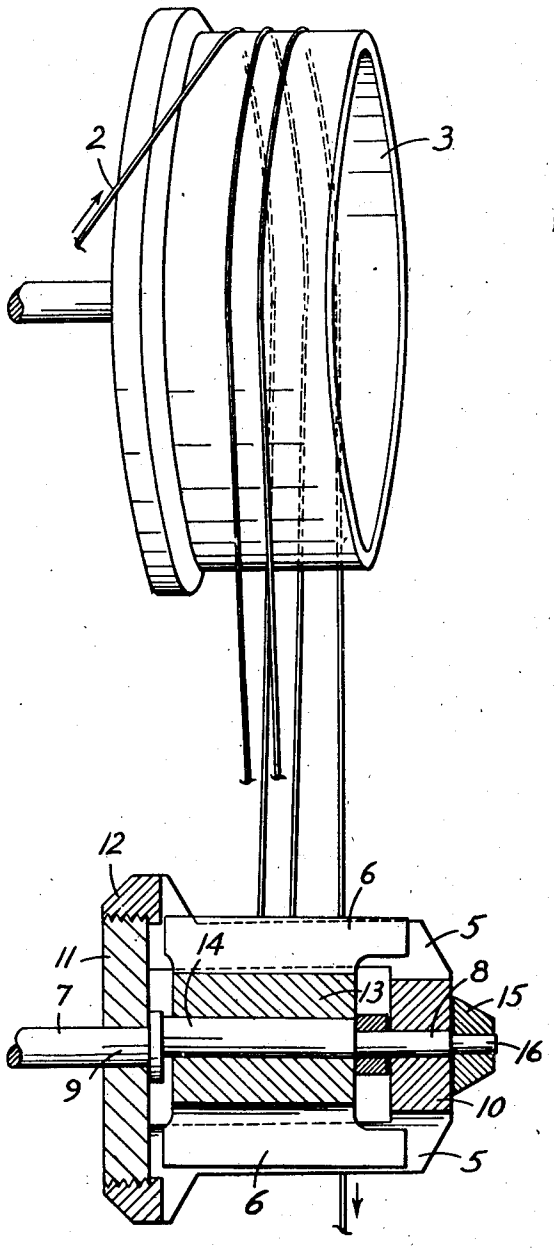


Fig. 1

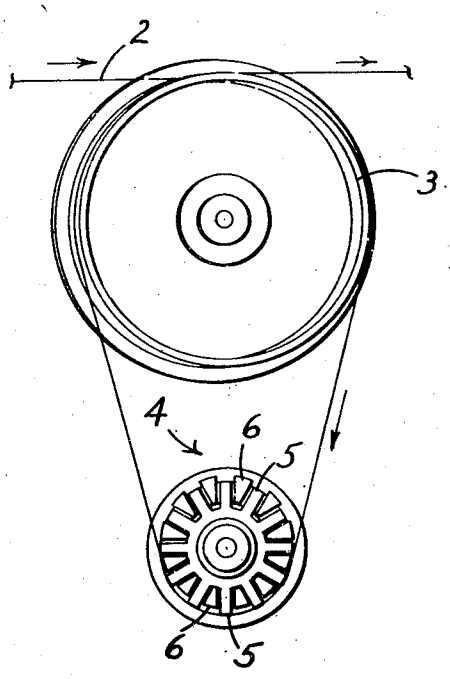


Fig. 2

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GUIDE MECHANISM

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9 Claims. (Cl. 28—71.5)

1

This invention relates to a guiding mechanism to cause and control the lateral displacement of thread wrapped one or more times around a wheel and to prevent the thread from riding or lapping upon itself. The improved guide mechanism of the present application is particularly adapted for use in connection with artificial filament spinning machines in which it may serve to prevent slippage of the filament on two such wheels between which it is being stretched. However, the guide mechanism of the present invention may be associated with thread delivery wheels in other mechanisms and thread-handling machines.

In guide mechanism heretofore employed, any broken filaments which may contact with the guide tend to cling thereto and build up thereon and when they become sufficiently built up, they tend to foul the filamentary strands proceeding about the guide mechanism. In accordance with the present invention, the conventional rotary or stationary guides heretofore employed for effecting lateral displacement of wraps about a delivery wheel is replaced with a thread-advancing guide which effects a greater thread-advancing action upon loose or stray filaments which are carried about the entire periphery of the guide than it can upon the loops of the main body of the thread which contacts only a portion of the guide periphery. Consequently any stray filaments are advanced to one or the other end of the guide and are thus shifted out of contact with the main loops of thread running between the wheel and the guide.

The invention is illustrated in the drawing, in which

Figure 1 is a side elevation of the wheel and guide mechanism with the guide in cross section; and

Figure 2 is a front elevation of the associated wheel and guide mechanism.

As shown in the drawing, the thread 2 proceeds over the wheel 3 which may be an idler or may be driven by a mechanism (not shown) and thence about the guide 4, being wrapped around the wheel and guide 4 to provide as many turns as are desired to accomplish whatever purpose is intended, such as to prevent slippage as the thread is delivered by the wheel 3, or to permit a liquid treatment to occur on such wheel, in which event a certain liquid may be sprayed upon the wheel. The axis of the guide as a whole may be canted with respect to the axis of rotation of the wheel, so that the wraps of thread are displaced from one another as they proceed about the wheel 3, and consequently they are prevented

2

from riding upon or overlapping previous loops of thread thereon.

The guide 4 is constituted of a thread-advancing device such as a reel comprising two sets of bar members 5 and 6 respectively. Both sets of bar members are supported upon a common shaft 7, which is stationarily mounted upon the frame of the machine. The bar members 5 are rotatably mounted as a unit upon the concentric portions 8 and 9 respectively of the shaft 7. For this purpose, the bar members 5 at their outer ends may be formed integrally with a web 10, whereas a disk 11 may be screwed into a suitable threaded bore within the rim 12 formed at the inner ends of the bars 5.

The other set of bar members 6 may be formed integrally upon a central sleeve 13 which is rotatably mounted upon a portion 14 of the shaft 7, which portion 14 is both inclined and offset with respect to the axis of the concentric portions 8 and 9 respectively.

As is apparent in Figure 2, the shaft 7 is preferably so arranged with respect to the wheel 3 that only the bars 5 are in effective contact with the loops of thread which pass about the guide and wheel. However, if any broken filaments should continue to pass about the guide, they would be advanced toward one of the ends of the guide, preferably the outer end so that such collected or accumulated stray filaments may be readily removed without the loops of thread about the wheel and guide interfering with such removal. A conical-shaped collar 15 pressed on the reduced-diameter outer end 16 of the shaft 7 remains stationary and serves to collect the stray filaments.

While the axis of the shaft 7 is shown inclined to the axis of the shaft upon which wheel 3 rotates, it is to be understood that the shaft 7 could be rearranged so that the axis of the concentric portions 8 and 9 are substantially parallel to the axis of rotation of wheel 3, in which event the loops of thread passing about the wheel 3 and the guide should preferably make contact with the bars 6 (instead of bars 5, as shown) which, of course, by virtue of the inclined axis of the portion 14 of shaft 7 would be inclined with respect to the wheel 3 and consequently would displace the wraps thereabout. In either arrangement of operation, the loops of thread about the wheel 3 and the guide 4 preferably make contact only with one set of bars of the guide 4, whereas any broken filaments that tend to proceed about the guide 4 are operated upon by both bar systems, and consequently are advanced to one end

of the guide and thus displaced from the scene of operation of the main loops of thread about the guide.

While a particular form of thread-advancing guide is shown, any thread-advancing type of rotor or reel may be employed in which the bars of one set are disposed outwardly of those of the other set along a definite portion of the path of rotation of the guide as viewed from a fixed position.

In the claims, the word "thread" is to be understood in a generic sense to include filaments, a multi-filament bundle, a yarn, a cord, or a strand of any material.

It is to be understood that changes and variations may be made in the specific construction shown without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. In thread guide mechanism, the combination of a wheel for receiving a thread and discharging it therefrom, and a guide associated with the wheel to cause lateral displacement of the thread wrapped one or more times about the wheel and guide associated as a unit and to prevent riding of the thread on itself, said guide comprising a thread-advancing reel having two sets of thread-carrying bar members mounted rotatably on stationary axes, the axis of one set being offset and inclined to that of the other, said reel being arranged with respect to the wheel so that substantially only one set of bar members makes effective contact with the thread wrapped thereabout the axis of the last-mentioned set of bars being inclined to that of the wheel.

2. In thread guide mechanism, the combination of a rotatable wheel supported only at one end for receiving the thread and discharging it therefrom, and a guide associated with the wheel to cause lateral displacement of the thread wrapped one or more times about the wheel and guide associated as a unit and to prevent riding of the thread on itself, said guide comprising a rotatable thread-advancing reel supported at that end only adjacent the supported end of the wheel and having two sets of thread-carrying bars mounted rotatably on stationary axes, the axis of one set being offset and inclined to that of the other, said reel being arranged with respect to the wheel so that substantially only one set of bar members makes effective contact with the thread wrapped thereabout, the axis of the last-mentioned set of bars being inclined to that of the wheel, and the reel being so constructed and arranged as to cause advance of the thread toward the unsupported end thereof.

3. In thread guide mechanism, the combination of a wheel for receiving a thread and discharging it therefrom, and a guide mechanism arranged to cause lateral displacement of the thread wrapped one or more times about the wheel and guide mechanism as a unit and to prevent riding of the thread on itself, said guide mechanism comprising a thread-advancing reel having an axis inclined to that of the wheel, said reel having movable thread-carrying means disposed peripherally thereof, and means for imparting motion to the thread-carrying means comprising a component generally parallel to the axis of the reel for effecting advance of the thread axially of the reel periphery.

4. In thread guide mechanism, the combination of a wheel for receiving a thread and discharging it therefrom, and a guide mechanism arranged to cause lateral displacement of the thread wrapped one or more times about the wheel and guide mechanism as a unit and to prevent riding of the thread on itself, said guide mechanism comprising a thread-advancing reel having an axis inclined to that of the wheel and a stationary collector at one end of the reel, said reel having movable thread-carrying means disposed peripherally thereof, and means for imparting motion to the thread-carrying means comprising a component generally parallel to the axis of the reel for effecting advance of the thread axially of the reel periphery.

5. In thread guide mechanism, the combination of a wheel for receiving a thread and discharging it therefrom, and a guide mechanism arranged to cause lateral displacement of the thread wrapped one or more times about the wheel and guide mechanism as a unit and to prevent riding of the thread on itself, said guide mechanism comprising a thread-advancing reel having an axis inclined to that of the wheel, said reel having movable thread-carrying means disposed peripherally thereof, and means for imparting motion to the thread-carrying means comprising a component generally parallel to the axis of the reel for effecting advance of the thread axially of the reel periphery, whereby any stray filaments clinging to the guide mechanism are subjected to thread-advancing action in excess of that to which the thread proper is subjected and consequently such filaments are laterally displaced from the thread.

6. In thread guide mechanism, the combination of a wheel for receiving a thread and discharging it therefrom, and a guide mechanism arranged to cause lateral displacement of the thread wrapped one or more times about the wheel and guide mechanism as a unit and to prevent riding of the thread on itself, said guide mechanism comprising a thread-advancing reel having an axis inclined to that of the wheel and having two sets of bar members and means for imparting relative motion to the sets of bars for effecting advance of the thread axially of the reel periphery, said reel being constructed and arranged with respect to the wheel so that substantially only one set of bar members makes effective contact with the thread wrapped thereabout.

7. In thread guide mechanism, the combination of a wheel supported rotatably at one end only for receiving a thread and discharging it therefrom, and a guide mechanism arranged to cause lateral displacement of the thread wrapped one or more times about the wheel and guide mechanism as a unit and to prevent riding of the thread on itself, said guide mechanism comprising a thread-advancing reel having an axis inclined to that of the wheel and supported from one end only adjacent the supported end of the wheel, said reel having movable thread-carrying means disposed peripherally thereof, and means for imparting motion to the thread-carrying means comprising a component generally parallel to the axis of the reel for effecting advance of the thread axially of the reel periphery.

8. In thread guide mechanism, the combination of a rotatable wheel supported from one end only for receiving a thread and discharging it therefrom, and a guide mechanism arranged to cause lateral displacement of the thread wrapped one or more times about the wheel and guide mechanism as a unit and to prevent riding of the thread on itself, said guide mechanism comprising a thread-advancing reel having movable

thread-carrying means disposed peripherally thereof, and means for imparting motion to the thread-carrying means comprising a component generally parallel to the axis of the reel for effecting advance of the thread axially of the reel periphery, said reel being rotatably mounted and supported at that end only adjacent the supported end of the wheel, said reel being constructed and arranged to be driven by the thread proceeding thereabout and to advance the thread toward the unsupported end thereof.

9. In thread guide mechanism, the combination of a rotatable wheel supported from one end only for receiving a thread and discharging it therefrom, and a guide mechanism arranged to cause lateral displacement of the thread wrapped one or more times about the wheel and guide

mechanism as a unit and to prevent riding of the thread on itself, said guide mechanism comprising a thread-advancing reel having movable thread-carrying means disposed peripherally thereof, and means for imparting motion to the thread-carrying means comprising a component generally parallel to the axis of the reel for effecting advance of the thread axially of the reel periphery, said reel being rotatably mounted and supported at that end only adjacent the supported end of the wheel, said reel being constructed and arranged to be driven by the thread proceeding thereabout and to advance the thread toward the unsupported end thereof, and a stationary collector at the unsupported end of the reel.

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