April 17, 1962 I. S. ROBERTS 3,030,039

DUAL YARN WINDING APPARATUS

Filed Dec. 15, 1955 3 Sheets-Sheet 1

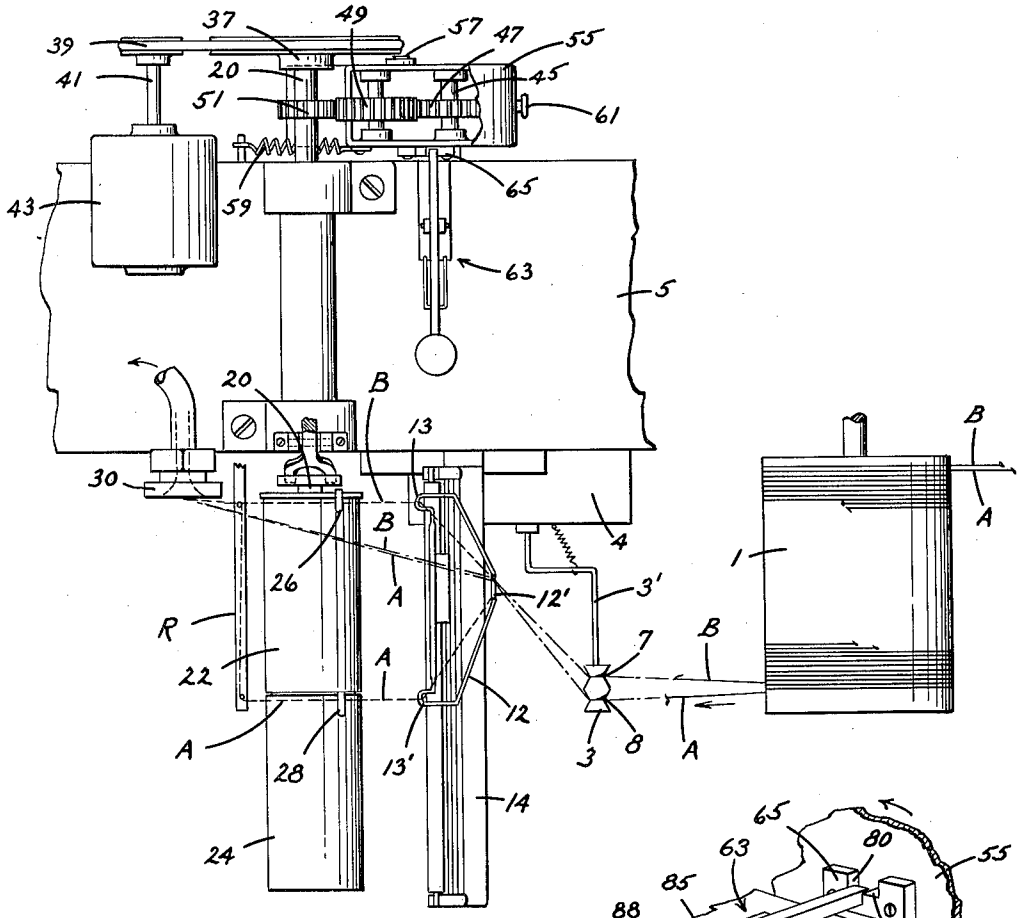


Fig. 1

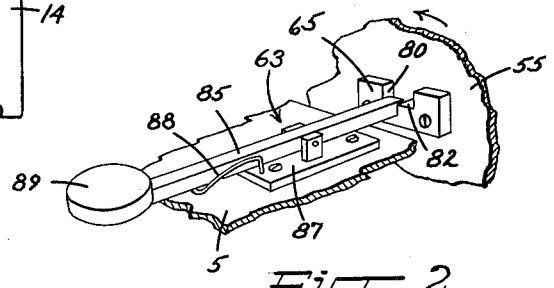


Fig. 2

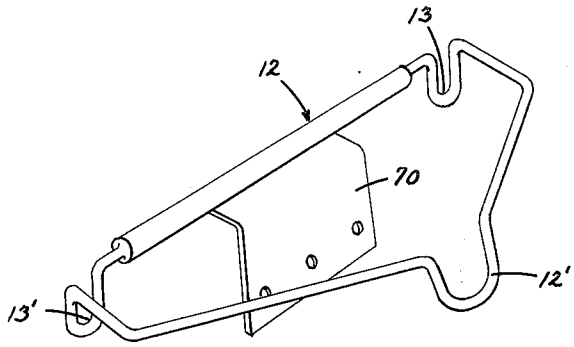


Fig. 3

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DUAL YARN WINDING APPARATUS

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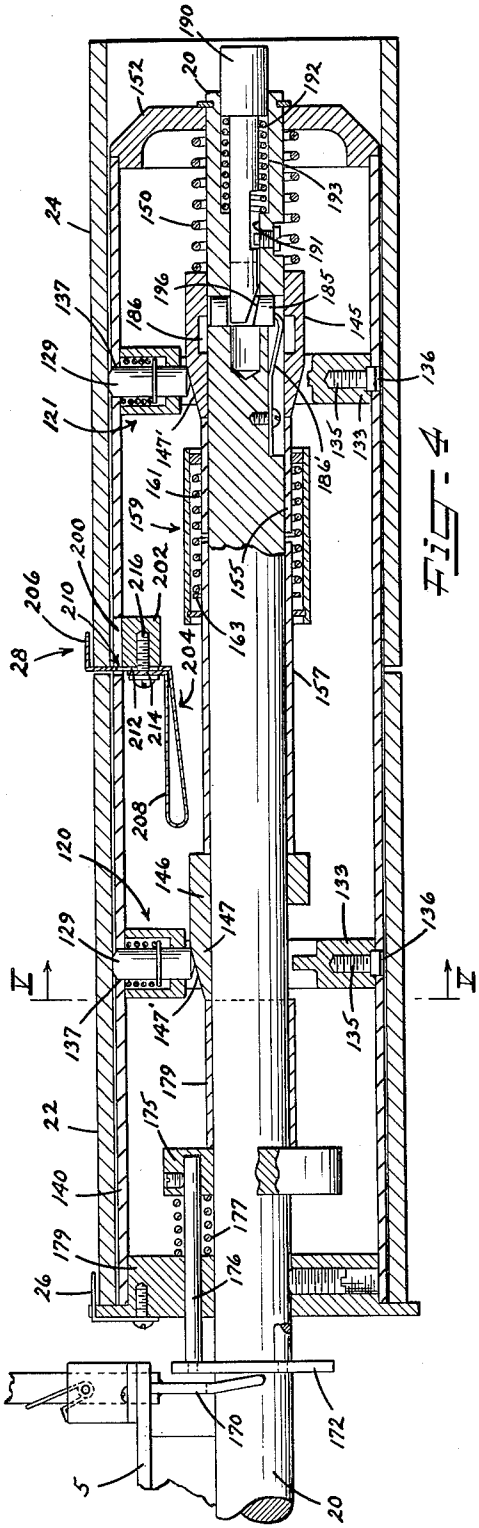


FIG. 4

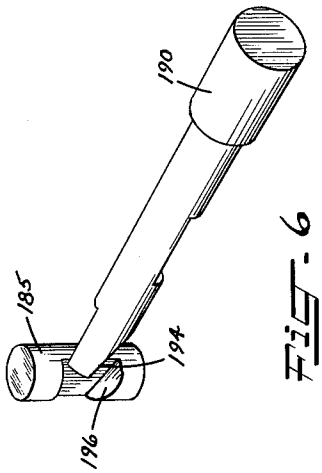


FIG. 6

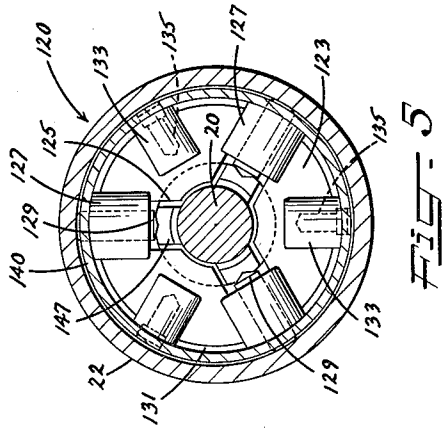


FIG. 5

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DUAL YARN WINDING APPARATUS

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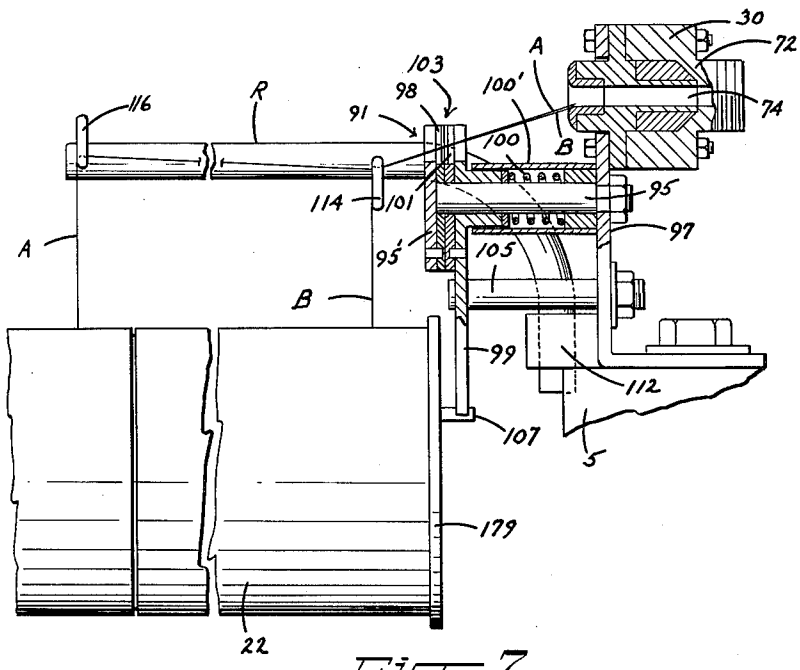


Fig. 7

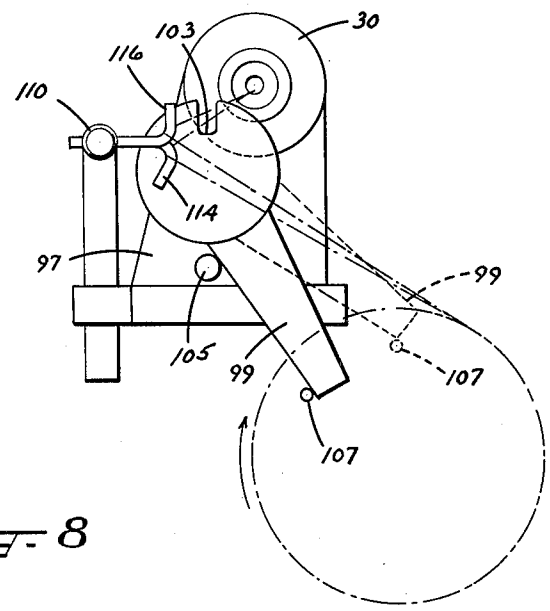


Fig. 8

United States Patent Office 3,030,039 Patented Apr. 17, 1962

3,030,039

DUAL YARN WINDING APPARATUS

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Filed Dec. 15, 1955, Ser. No. 553,305
3 Claims. (Cl. 242—18)

The present invention relates to a novel and improved yarn collecting or winding apparatus wherein a pair of yarn collecting tubes are supported on a single driven tube support in an endwise or inboard and outboard relationship.

Recently, there has been developed a spinning machine for continuously producing and processing artificial yarns such as viscose type rayon wherein the yarn production is doubled with the yarns being extruded and processed in pairs. A pair of yarns traveling in a side-by-side relationship issue from each final drying drum of the machine. Since the yarns issuing from the drying drums were completely and finally processed, they were in condition to be collected on yarn collecting tubes or cones for shipment to customers.

It was therefore necessary to develop a dual yarn winding or collecting unit for collecting the pair of yarns from each drying drum which unit was of suitable size, structure and efficiency whereby a large quantity of the units could be installed near the machine with one dual mounted immediately adjacent each final drying drum. A principal factor which had to be considered in developing such an apparatus was that the apparatus had to be one which could be easily handled by the operator. For example, the winding apparatus had to be such that the operator could easily and quickly position and remove from position on the apparatus a pair of cardboard or plastic yarn collecting tubes whereby each yarn of the pair of yarns issuing from the dryer roll could be collected on a separate tube. In addition, the apparatus had to be such that the operator could easily thread or lace-up on the apparatus and on the endwise positioned tubes the two yarns issuing from a final drying drum. These factors were vitally important in that one operator had to supervise and handle the yarns issuing from a large number of the drying rolls.

It is therefore one object of my invention to provide a novel and improved dual winding or collecting apparatus for collecting each yarn of a pair of yarns being simultaneously fed to the winding structure in a side-by side relationship on a separate yarn collecting unit such as a tube, which tubes are supported in an endwise relationship.

Another object of my invention is to provide a novel and improved yarn tube collecting apparatus wherein a single yarn tube supporting assembly is provided for supporting a pair of tubes in an endwise or inboard and outboard relationship.

Still another object of my invention is to provide a novel and improved winding or yarn collecting apparatus wherein a manually shiftable or depressable tailing guide is installed for use with the outboard tube of a pair of tubes mounted in an endwise relationship for the yarn lacing-up operation and for forming an initial transfer tail of yarn on the base end of the outboard tube.

Another object of my invention is to provide an improved and novel dual yarn winding apparatus wherein a yarn cutting assembly of novel construction is provided for use in the yarn lacing-up operation.

Another object of my invention is to provide a novel and improved dual winding apparatus wherein a single traverse guide unit is provided for directing each yarn of a pair of yarns traveling in a side-by-side relationship to

a separate yarn collecting tube of a pair of tubes mounted in an endwise relationship.

One final object of my invention is to provide a novel and improved dual yarn winding apparatus wherein means is provided for disconnecting the traverse drive means for the traverse guide unit from its drive source.

Other objects and advantages of my invention will become more apparent from a study of the following description and drawings wherein:

FIGURE 1 is a top view of my novel and improved dual yarn winding apparatus;

FIGURE 2 is a perspective on an enlarged scale showing the means for disconnecting the traverse drive means from its drive source;

FIGURE 3 is a perspective of enlarged scale showing the dual yarn traverse guide;

FIGURE 4 is an elevation, partially sectioned and of enlarged scale, of the tube supporting structure for supporting in endwise or inboard and outboard relationship a pair of yarn collecting tubes;

FIGURE 5 is a section taken along lines V—V of FIGURE 4;

FIGURE 6 is a perspective of enlarged scale of a portion of the structure of FIGURE 4;

FIGURE 7 is a front view of enlarged scale and partially sectioned showing a yarn cutting assembly which is used for disconnecting the yarns from the aspirator assembly during the yarn lacing-up operation; and

FIGURE 8 is an end view of the apparatus shown in FIGURE 7.

In general, my novel and improved yarn winding apparatus comprises a base support having a spindle journalled therein which spindle supports a yarn tube supporting assembly for holding in position thereon a pair of yarn collecting tubes in endwise or inboard and outboard relationship. A permanent tailing guide is provided for the inboard collecting tube and is affixed to the tube supporting assembly while a shiftable or depressable tailing guide is provided for the outboard tube and is also secured to the tube supporting assembly. An aspirator assembly mounted on the base support adjacent the tube supporting assembly is provided for use in initially lacing-up the yarns on the collecting tubes and a cutting unit for disconnecting the yarns from the aspirator is mounted on the aspirator mounting. For winding the yarns in even layers on the collecting tubes, a single traverse guide is provided for simultaneously guiding each yarn of a pair of yarns traveling toward the collecting tubes in a side-by-side relationship to a separate collecting tube, and means are provided for disconnecting the traverse drive means for the dual guide from the main drive source whereby the yarns may be laced-up on the winding apparatus and transfer tails of yarn may be formed on the base ends of the collecting tube.

Referring now to the drawing and more particularly FIGURE 1, there is shown a discharge drum 1 of the final drying drums of the continuous yarn producing and processing machine (not shown). A pair of yarns A and B are introduced to the drum 1 at one end thereof and are removed from the drum in a side-by-side relationship at the opposite end thereof.

A dual spring loaded dancing roll or tension guide 3 is pivotally mounted by shaft 3' to a support 4 extending from a base support 5 for accommodating the pair of yarns leading from the drying drum 1. As seen in the drawing, the dancing roll 3 comprises a pair of yarn guiding grooves 7 and 8 wherein each groove accommodates one of the two yarns A and B traveling thereover. When the tension in the running yarns increases, the yarns elevate the dancing roll 3 and when the yarn tension decreases, the roll 3 lowers itself to take up the slack in the

running yarns A and B. With this arrangement, increased and decreased tension in the yarns A, B is continuously compensated for by the dancing guide roll 3.

Mounted adjacent the dancing roll 3 is a dual traverse guide 12 (FIGURE 3 also) which receives the yarns from the dancing roll 3 and has a common guide slot 12' and separate guide slots 13, 13'. The guide 12 is mounted within a traversing guideway 14 secured to the base support 5 whereby the guide 12 is guided back and forth by a drive means (to be described later).

A drive shaft or spindle 20 is journalled to the base support 5 adjacent the traverse guideway 14. A pair of yarn collecting units 22 and 24, such as tubes, are mounted in endwise or inboard and outboard relationship respectively on a tube support assembly (to be described later) which is secured to the spindle 20. Trailing guides 26 and 28 are secured to the tube supporting assembly mounted on the spindle 20 and serve to initially form a transfer-tail of yarn at the base end of each of the tubes 22 and 24. The structure of the tailing guide 28 for the outboard tube 24 constitutes a part of the present invention and will be described in greater detail hereinafter.

An aspirator assembly 30 of known structure is mounted to the base support 5 and is used in the lacing-up of the yarns A and B on the collecting tubes 22 and 24.

As mentioned above, the spindle 20 is journalled in the base support 5 and extends through the opposite side of the base 5. For driving the spindle 20, a driving gear 37 is secured to the spindle 20 which gear is connected through a belt 39 to a main drive shaft 41 of a drive motor 43 mounted on the base support 5. A shaft 45 is also journalled in the base support 5 for driving the yarn traverse guide 12 back and forth along the traverse guideway 14. The shaft 45 extends through the base support 5 through the drive side of the support and has a drive gear 47 secured thereto at its free end. The gear 47 and the traverse drive shaft 45 are driven through a connecting or intermediate gear 49 which transmits the drive from a gear 51 secured to the spindle 20.

A gear casing or housing 55 is provided for the intermediate gear 49 and the traverse shaft drive gear 47, the intermediate gear 49 extending through the housing wall. The housing is pivotally mounted to the base support 5 at point 57. Secured to the base support 5 is a tension spring 59 which normally urges the intermediate gear 49 into drive connection with the spindle gear 51. It is of course, necessary to disconnect the traverse guide drive 45 from the spindle drive gear 51 when lacing-up the yarn winding apparatus. For this purpose, a handle 61 is secured to the gear casing 55 whereby the casing and intermediate gear 49 may be pivoted out of drive contact with the spindle gear 51. A latching assembly 63 (also see FIGURE 2) is secured to the top of the base support 5 and cooperates with the catch 65 secured to the side of the gear casing 55 to both hold the gear casing out of its normal drive position when pulled back and to release the gear casing when manually actuated so that the casing and the intermediate gear 49 spring back into drive contact with the spindle gear 51.

After explaining the general operation of the winding apparatus, the elements and assemblies described generally above will be described more specifically.

As seen in FIGURE 1, the yarns A, B pass onto the final drying drum 1 of the yarn producing and processing machine. As they are wound around the drum 1, they pass across the drum to the opposite end thereof at which point they are discharged from the drum 1. The yarns are now in position to be laced-up on the dual yarn winding apparatus and pass first to the double grooved dancing roll 3 from which they travel to the dual traverse guide 12. As seen in FIGURE 1, the yarns A and B are received by the common guide slot 12' of the dual guide 12. For threading or lacing-up the winding apparatus, the yarns A and B are drawn directly from the common guide slot 12' of the guide 12 into the aspirator assembly 30 which continues to draw the yarns A, B through the dual guide 12 (see dotted lines). The yarns A and B are then separated and positioned within the separate guide slots 13 and 13' of the dual guide 12 (see dotted lines). The yarn B is then positioned under the tailing guide 26 for the inboard tube 22 while the yarn A is positioned under the tailing guide 28 for the outboard tube (see dotted lines). From the tailing guides, the yarns are separately laced over the guide bar R (to be described later).

The yarns A and B are now in position whereby a transfer tail of yarn may be formed at the base end of each yarn collecting tube 22 and 24. In forming the transfer tail, it is necessary to rotate the spindle without traversing the yarns back and forth across the face of the tubes 22 and 24. To disconnect the traverse guide drive shaft from the drive gear 51 on the spindle 20, the gear casing 55 is pulled backward and is locked in this position through the latching assembly 63 in cooperation with the catch 65 secured to the gear casing 55. The motor 43 is then started whereby only the spindle 20 is rotated. The yarns A and B are snubbed by the tailing guides 26 and 28 during the first revolution of the tubes 22 and 24 which are driven through the spindle 20. Before the tubes make a complete revolution, the yarns are cut at a point adjacent the entrance of the aspirator assembly 30 after which the yarns continue to wind around the base ends 22 and 24 for several convolutions, thus forming the transfer tails. After a suitable transfer tail is formed on the tubes, the gear casing 55 is then permitted to fall back in drive position with the spindle gear 51 by releasing the latching assembly 63 from the catch 65 whereby the dual traverse guide 12 is driven back and forth across its guideway 14 so that the yarns A and B are wound onto the collecting tubes 22 and 24 in even layers.

An enlarged view of the dual traverse guide 12 is shown in FIGURE 3 of the drawings. As seen therein, the guide 12 consists preferably of a wire-like frame, one side of which is tapered to form an apex. At the apex, the wire loops to form a common guide slot 12'. The side of the wire frame 12 opposite the apex or common guide slot 12' loops at each end thereof to form separate yarn guide slots 13 and 13'. To this latter side is secured a guide attaching support 70 by which the dual yarn traverse guide 12 is secured to the traversing drive means 45 which extends into the traverse guideway 14. It was found most essential to use the dual traverse guide of this nature with applicant's winding apparatus. The yarns A and B must travel in parallel and proximate relationship upwardly from their draw off point (the dancing roll 3) into a traversing unit; otherwise, unreasonable strain and slack will alternately occur within each yarn of the pair as they travel back and forth across the faces of the yarn collecting tubes.

The aspirator assembly 30 of known structure is shown in FIGURES 1 and 7 of the drawings. As seen therein, a suction chamber 72 is provided which houses a suction channel 74 through which travel both the yarns and air under pressure, the air being introduced into the channel 74 in suitable manner as with prior art aspirators.

FIGURE 2 shows on an enlarged scale and in more specific detail the latching assembly 63 and the cooperating catch 65 secured to the gear housing 55 for connecting and disconnecting the traverse guide drive means and intermediate gear 49 into and out of drive connection with the gear drive 51 of spindle 20 whereby the yarn transfer tails may be formed on the tubes 22 and 24 as mentioned above. As seen in FIGURE 2, the catch 65 preferably has a pair of side-by-side indents or notches 80 and 82. As seen in FIGURES 1 and 2, the notch 80 is used for maintaining the gear housing 55 out of drive connection while the notch 82 comes into use when the gear casing 55 is in drive connection. A depressable latch bar 85 is pivotally mounted to a base 87 which in turn is secured to the top of the base support 5. The latch bar

is so positioned that it cooperates with the notches 80 and 82 of the catch 65, being urged within the notches by latch spring member 88. A depressing knob 89 is affixed to the latch bar 85 whereby the latch bar 85 may be raised out of the indent or notch 80 of the catch 65 to permit the gear casing 55 to be drawn back into drive position through the tension of spring 59 secured to the casing 55 and the base support 5.

When the gear casing 55 is pivoted out of drive positioned by pulling back on the hand grip 61 (FIGURE 1), the latch bar 85 will slide out of the upper indent 82 and fall into the lower indent 80 to lock the gear casing in the out-of-drive position. As mentioned above, the gear casing 55 and the traverse driving mechanism 45 contained therein is moved out of drive connection prior to forming the initial yarn convolutions or transfer tails at the base end of the collecting tubes 22 and 24. After the transfer tails have been formed, the knob 89 of the latch bar 85 is depressed, thus raising the bar 85 from the notch 80 to permit the gear casing to move or pivot back into drive connection with the intermediate gear 49 in contact with the spindle gear 51. As the casing 55 pivots back to its normal position, the latch bar 85, being raised out of the indent 80 of the catch assembly 65, slides into the indent 82.

As mentioned heretofore, the yarns A, B are introduced into the aspirator assembly 30 during the lacing-up operation. To cut the yarns A, B loose from the aspirator after they have been snubbed by the tailing guides 26 and 28 during the transfer-tail forming operation as also mentioned above, a cutting assembly 91 may be provided as shown in enlarged form in FIGURES 7 and 8. The cutting assembly 91 automatically severs the yarns A, B from the aspirator assembly at a predetermined time. As seen in FIGURES 7 and 8, a wide flanged supporting stud 95 is threaded through the support 97 for the aspirator assembly 30 which support is secured to the top of the base support 5 and extends upwardly therefrom. Keyed to the flanged head 95' of the stud 95 is a stationary or permanent blade 98 which is comparable in diameter to the flange on the stud. A control arm 99 is loosely positioned over the stud and has keyed thereto a rotating blade 101 which cooperates with the permanent blade 98. A tensioned spring 100 is positioned over the supporting stud 95 and is compressed between the aspirator support 97 and the hub of the control arm 99 to urge the permanent and rotating blades 98 and 101 into cooperating or cutting relationship. A sleeve 100' is fitted over the stud 95 and the spring 100 to prevent the yarns from becoming entangled in the spring after the yarns are cut. As seen more clearly in FIGURE 8, the permanent and rotating blades and the members to which they are keyed have notches 103 cut into their peripheries. The edges of these notches in the permanent and rotating blades are sharpened and constitute the cutting edges. The yarns A, B leading from the dual transverse guide 12 are threaded through the notches of these members before the yarns are introduced into the suction channel 74 of the aspirator assembly 30. A positioning or stop pin 105 is also secured to the aspirator mounting 97 and extends outwardly therefrom into the path of the control arm 99 at a point below the arm. As seen in FIGURE 8, the notches 103 of the blades 98 and 101 are in alignment when the arm 99 is moved (manually) to its lowermost position against the pin 105. A pin 107 is affixed to a stop or positioning member 179 at the drive end of the tube supporting member (hereinafter described) which pin controls the movement of the arm 99. As the tube supporting member rotates, the pin 107 contacts the arm 99 to move it upwardly whereby the rotating blades 101 will rotate around its axis to cut the yarns lying within the notches 103, 103.

In FIGURE 7, there is also shown a lacing-up guide bar R which may be used to receive the yarns A, B from the tailing guides 26 and 28 and guide them into the aspirator assembly 30. As seen in the figure, the lacing-up guide R is pivotally mounted at 112 to the base support 5 whereby the guide bar may be moved out of position after the lacing-up operation and transfer tailing operation are completed. The guide hooks 114 and 116 are affixed to the lace-up guide bar R for actually guiding the yarns A and B. By using the lace-up guide R, the yarns will maintain their proper alignment until severed and, in particular, the yarn A (outboard) will not run under the end of the inboard tube 22 before it is cut.

The tube supporting assembly for supporting the tubes 22 and 24 in endwise or inboard and outboard relationship will now be described. As seen in FIGURES 4 and 5 of the drawings, a pair of supporting ring assemblies 120, 121 are secured to the spindle 20. As seen more clearly in FIGURE 5, the ring support assembly 120 comprises a web portion 123. Cut through the web 123 are three spaced apart openings 125. The purpose of the openings 125 will become apparent at a later point in the description. Small cylindrical housings 127, 127 are supported by the web 123 and house spring-loaded locking pins 129, 129 (also see FIGURE 4). The outer ends of the housings 127, 127 terminate at the inner periphery of an outer ring 131. Also supported by the rim 131 and the web 123 and spaced between the housings 127, 127 are fastening blocks 133, 133 which are adapted to receive fastening screws 135, 135. Ring assembly 121 is of the same structure as ring 120.

An elongated sleeve 140 (see FIGURE 4) is positioned over the spindle and the support rings 120, 121. The sleeve 140 extends the length of the spindle 20. Suitable holes 136, 136 are drilled through the elongated sleeve 140 to receive the screws 135, 135 which are threaded into the ring blocks 133, 133 to hold the sleeve 140 in place on the support rings. Additional holes 137, 137 are drilled through the sleeve 140 whereby the locking pins 129, 129 may be moved outwardly through their housings 127, 127 and through the sleeve 140 to engage or form a drive connection with the tubes 22 and 24 positioned over the sleeve 140. As shown in FIGURES 4 and 5, the locking pins 129, 129 are in their tube locking position.

The lock and unlock position of the locking pins 129, 129 for both the inboard and outboard support rings 120, 121 are controlled by expanders or spiders 145 and 146 which are slidingly positioned over the spindle 20 and are capable of moving axially along the spindle to contact the base end of the pins 129, 129 to urge the pins outwardly through the holes 137, 137 of sleeve 140. As seen in FIGURE 4, the legs 147, 147 (see FIGURE 5) of the expanders 145 and 146 which lie adjacent the support rings 120, 121 have tapered surfaces 147, 147' whereby when the expanders are moved axially of the spindle 20 toward the support rings, the tapered ends of the expanders pass within the web openings 125, 125 to contact the base ends of the pins to urge them outwardly through the sleeve 140 into engagement with the collecting tubes 22 and 24.

To control the movement of the expanders 145 and 146 along the spindle 20, there are provided a series of elements slidingly positioned on the spindle 20 which also move axially of the spindle. These elements include a compressible main spring 150 positioned over the spindle 20 at the outboard end thereof. A spring stop 152 is affixed to the spindle 20 at the extreme outboard end thereof so that the main spring 150 lies between the spring stop 152 and the outboard expander 145. Positioned beyond the opposite end of the outboard expander 145 and to the inboard side of the support ring 121 is a short sleeve section 155 which is adapted to be contacted by the tapered ends of the expander 145 as the expander moves under the base ends of the locking pins 129 to urge them into engagement with the outboard yarn collecting tube 22. A longer sleeve section 157 abuts the shorter sleeve section and lies between the shorter sleeve

section 155 and the inboard expander 146. The adjacent ends of the sleeve sections 155 and 157 are coupled together by spring coupling assembly 159. After the yarn collecting tubes 22 and 24 are positioned over the sleeve 140, the expander 145 is released from its locked position on the spindle 20 (as will be explained later) after which the main spring 150 which is already cocked or compressed will urge the expander 145 inwardly of the spindle 20 whereby the tapered ends of the expander will contact and urge the locking pins 129 housed in the outboard ring support assembly 121 upwardly into engagement with the inner surface of the outboard collecting tube 24. As the tapered end of the expander 145 passes under the base ends of the locking pins 129, it moves into contact with the shorter sleeve section 155 on the opposite side of the ring support assembly 121 thereby moving the shorter sleeve section to the left or inwardly of the spindle 20. The spring 161 of the shaft coupling 159 is thereby compressed against a spacing ring 163 positioned around the longer sleeve section 157 which urges the longer sleeve 157 inwardly of the spindle 20 to contact and urge the inboard expander 146 against the base ends of the locking pins 129, 129 of the inboard support ring 120 to urge the lock pins outwardly against the inner surface of the inboard collecting tube 22 to firmly hold the tube 22 in place on the sleeve 140. The purpose of the spring coupling 159 is to permit the expanders 145, 146 and the pins of each support ring 120 and 121 to operate independently of one another. This feature is important since the diameter of the yarn collecting tubes usually varies a slight amount. With this arrangement, the outboard expander 145 may be moved inwardly of the spindle as far as is necessary to urge the locking pins into locking engagement with the outboard tube 24. The spring coupling 159 also permits the inboard expander 146 to move against the locking pins 129, 129 of the inboard support ring 120 as far as is necessary to urge the locking pins into locking engagement with the inboard tube 22.

The release mechanism for moving the expanders 145 and 146 outwardly of the spindle 20 to release the lock pins 129, 129 from their lock position will now be described. As seen in FIGURE 4, a lever 170 is mounted to the base support 5 adjacent the inboard end of the spindle 20. A release ring 172 is slidingly positioned over the inboard end of the spindle 20 externally of the tube supporting assembly. The ring 172 is connected with a collar 175 which is also slidingly positioned over the spindle 20 at a point within the tube supporting assembly but adjacent the inboard end thereof. A plurality of pins 176, 176 secured to both the collar 175 and the release ring 172 connects these two elements. A spring 177 is positioned over each connecting pin 176 to lie between the collar 175 and a stop or positioning member 179 at the inboard end of the tube supporting assembly. On the spindle and between the collar 175 and the inboard expander 146 lies a short sleeve section 179. To release the lock pins from their lock position, the release lever 170 is moved toward the outboard end of the spindle to contact the release ring 172 which also moves toward the outboard end of the spindle to urge in turn the collar 175, the short sleeve section 179, the inboard expander 146, the sleeve sections 157 and 155, the outboard expander 145 and the main spring 150 toward the outboard end of the spindle 20. As the outboard expander 145 moves to the right or outwardly of the spindle 20, a holding pin 185 positioned within a hole drilled through the spindle 20 at right angles to the spindle axis is urged by a spring strip 186', positioned and anchored within a vertical slot cut into the spindle 20, into an offset 186 in the outboard expander 145. With this arrangement, the expanders 145 and 146 remain out of contact with the locking pins 129, 129 and the main spring 150 is maintained in cocked or compressed condition.

To release the expanders 145 and 146 from their unlocked position whereby the main spring 150 may urge the expanders toward the drive end of the spindle to move the locking pins 129, 129 into lock position, the following release mechanism is provided. As seen in FIGURES 4 and 6, a release pin 190 is positioned within a bored hole 191 in the outboard end of the spindle 20 and a spring 192 is positioned around the release pin 190, the spring being confined within a counterbored section 193 of the channel at the extreme outboard end of the spindle 20. The end of the release pin 190 extending within the spindle channel is tapered as at 194. As seen more clearly in FIGURE 6, the holding pin 185 is slotted transversely of its length and the bottom wall 196 of the slot is also tapered. To depress the lock pin 185 out of position within the offset 186 of the expander 145, the release pin 190 is pressed inwardly of the bored channel 191 whereby the tapered surface 194 of the release pin 190 will move into contact with the tapered wall 196 of the slotted lock pin 185 to gradually depress the holding pin 185 out of the offset 186 of the expander 145.

As soon as the end of the holding pin 185 is depressed out of the offset 186 of the expander 145, the cocked or compressed main spring 150 is released and urges, as explained before, the expanders 145 and 146 in addition to the release mechanism toward the inboard or drive end of the spindle whereby the locking pins 129, 129 will again be urged into locking engagement with the yarn tubes 22 and 24. The expanded force of the main spring 150 maintains the expanders in contact with the locking pins 129, 129.

As mentioned above, a depressable tailing guide assembly 28 is provided for use with the outboard tube 24. As seen in FIGURE 4, a slot 200 is cut through the sleeve 140 near the center of the sleeve and a support block 202 is secured to the inner wall of the sleeve 140 adjacent the outboard edge of the slot 200. A spring strip 204 extends through the sleeve slot 200 and has a short leg 206 formed therein which lies above the sleeve 140 and constitutes the tailing guide for the outboard tube 24. A longer leg 208 is formed in the opposite end of the strip 204 and lies in a direction opposite to that of the short leg 206 whereby a neck section 210 is formed in the strip 204. Extending the length of and through the neck section of the strip 204 is a slot 212. To provide a springing action within the strip 204, a loop is formed in the longer leg 208 by doubling back the longer leg section of the strip 204. A short bend is incorporated in the extreme end of the doubled back or looped portion of the longer leg 208 to provide a short length section 214 which lies flush with the neck section 210. A screw 216 extends through the short length section 214 and the slot 212 of the neck section of the spring strip which screw is lodged in the support block 202. With this arrangement, the tailing guide or leg 206 may be depressed against the sleeve 140 when the operator applies pressure to the leg 206, the slotted neck portion sliding inwardly over the screw 216. The inboard tube 22 may then be moved into or out of position over the leg or tailing guide 206. When the pressure applied by the tube 22 is released (after the tube has passed over the leg 206), the leg 206 will return to its operative position ready for use with the outboard tube 24 when moved into position on the sleeve 140.

It should be pointed out that the use of the above described apparatus is not limited to the collecting and winding of pairs of yarns issuing from yarn producing machines. The apparatus may be used with any type of apparatus from which pairs of yarns are discharged in a close side-by-side relationship.

While preferred embodiments of the invention have been shown and described, it is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A yarn winding apparatus comprising a base support, a spindle journaled at one end in said support and extending cantilever style therefrom, a yarn collecting core supporting assembly mounted on said spindle for supporting at least a pair of yarn collecting cores in endwise or inboard and outboard relationship, a collecting core positioning member mounted on said spindle at the inboard end thereof, a tailing guide secured to said positioning member for use with the inboard core, a shiftable tailing guide secured to said core supporting assembly adjacent the middle thereof for use with the outboard core, a dual lacing guide pivotally mounted on said base support, and a pair of spaced apart yarn guide hooks on said lacing guide in alignment with the tailing guides of the yarn collecting cores for receiving the yarns from the tailing guides during the yarn lacing-up operation.

2. Winding apparatus for simultaneously winding a plurality of yarns on a plurality of cores wherein the yarns are continuously being supplied to the apparatus even during doffing of the filled cores, said apparatus comprising a base support, a spindle journaled in said support, drive means for said spindle, a yarn collecting core supporting assembly mounted on said spindle for supporting a plurality of yarn collecting cores in endwise relationship, tailing guides associated with said supporting assembly for use with each collecting core, a lacing guide pivotally mounted on said base support, a plurality of spaced apart yarn guide hooks on said lacing guide in alignment with the tailing guides for receiving the yarns from the tailing guides during lacing-up operations, an aspirator on said base support adjacent one of said guide hooks for taking up the yarns during doffing and lacing-up operations, automatically operable cutter means between said aspirator and the guide hook located closest to said aspirator, and means on said spindle for operating said cutter means during the first revolution thereof to sever the yarns.

3. Winding apparatus for simultaneously winding a pair of yarns on a pair of cores wherein the yarns are continuously being supplied to the apparatus even during doffing of the filled cores, said apparatus comprising a base support, a spindle journalled in said support, a drive means for said spindle, a yarn collecting core supporting assembly mounted on said spindle for supporting a pair of yarn collecting cores in endwise or inboard and outboard relationship, tailing guides associated with said supporting assembly for use with each collecting core, a dual lacing guide pivotally mounted on said base support, a pair of spaced apart yarn guide hooks on said lacing guide in alignment with the tailing guides for receiving the yarns from the tailing guides during lacing-up operations, an aspirator on said base support adjacent one of said guide hooks for taking up the yarns during doffing and lacing-up operations, and automatically operable cutter means between said aspirator and the guide hook located closest to said aspirator, said cutter means being operable by said spindle during the first revolution thereof to sever the yarns.

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