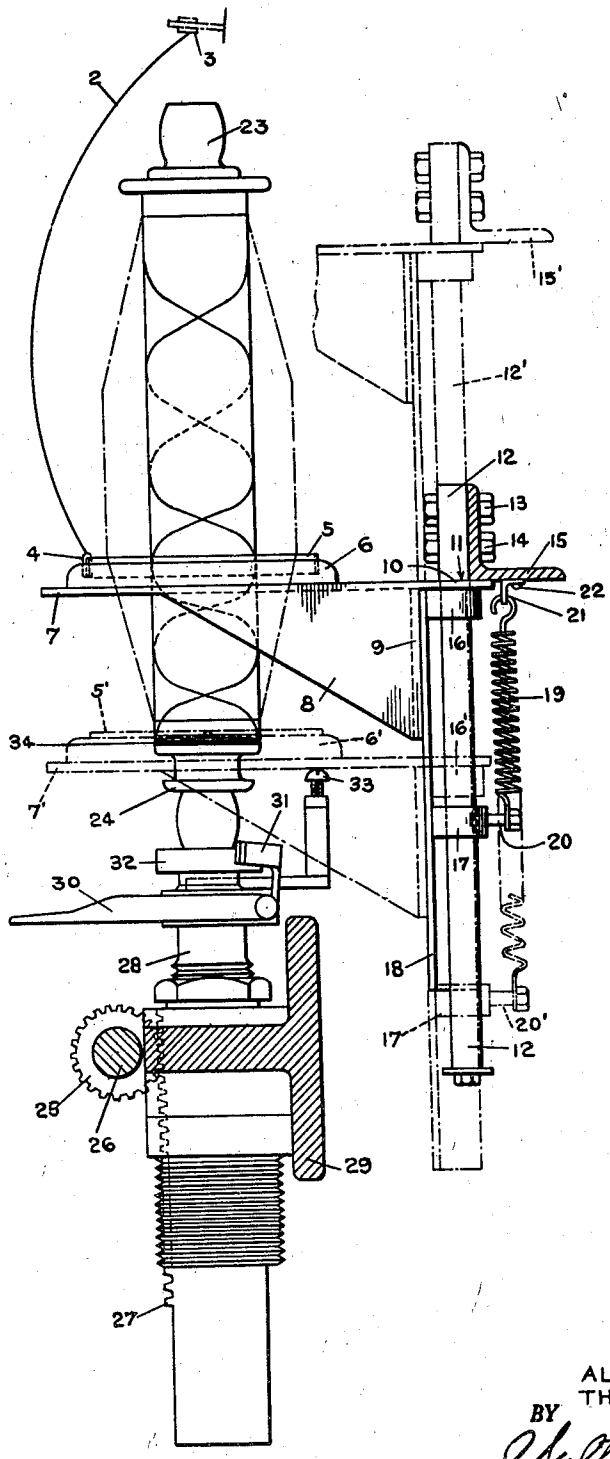
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TRANSFER TAIL WINDING DEVICE

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TRANSFER TAIL WINDING DEVICE

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This invention relates to twisting and winding apparatus for twisting and winding yarns to form yarn packages, and relates more particularly to twisting and winding apparatus for the production of yarn packages having a magazine wrap or transfer tail.

A magazine wrap or transfer tail, as commonly understood in the art, is a portion of the inner end of the first yarn wound on the yarn support and so disposed as to be positively secured during the winding of the remainder of the yarn package yet readily available for tying directly to the outer end of the yarn on another yarn package. The purpose of providing a magazine wrap or transfer tail on a yarn package is to enable an uninterrupted flow of yarn to be maintained from a depleted yarn package to a full yarn package adjacent thereto, as in a creel or other yarn package holder upon which the yarn packages are supported.

An object of this invention is to provide an improved apparatus for winding yarn on to a yarn support in such a manner that a secure yet readily available magazine wrap or transfer tail is provided.

Another object of this invention is the provision of relatively simple and efficient means for applying said magazine wrap or transfer tail to yarn supports while the yarn support is rotating at high speed, as in continuous spinning processes wherein artificial filaments are spun.

A further object of this invention is the application of a firmly secured magazine wrap or transfer tail to a headless or single flanged yarn package or bobbin during yarn twisting and winding operations wherein the rotating spindle carrying the bobbin is provided with a builder motion and the ring rail carrying the ring and traveler is provided with a chaser motion superimposed thereon to produce the headless or single flanged yarn package.

Other objects of this invention will appear from the following detailed description and the accompanying drawing.

In the accompanying drawing, wherein a preferred embodiment of our invention is shown, the figure is a side elevation view, partly in section, of our novel apparatus for the application of a magazine wrap or transfer tail at the base of a bobbin.

Referring now to the drawing, a yarn 2 passing through a yarn guide 3 and coming from any suitable source of supply such as a metier or spinning cabinet (not shown) passes downward and is threaded through a traveler 4 mounted on

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a spinning ring 5 set in a ring holder 6, the latter being mounted on a plate 7. Plate 7 is integral with a pair of dependent, triangularly-shaped bracing members 8, only one of which is shown in the figure, which bracing members are attached, for added rigidity, to a flat bracing section 9 lying between said bracing members 8. Plate 7 extends beyond members 8 to form a lip 10, the latter being provided with suitable holes at 11 adapted to receive a pair of symmetrically disposed guide rods or shafts 12, only one being shown in the drawing for the sake of clarity. Shaft 12 is attached, as by bolts 13 and 14, to a vertically reciprocating beam 15 forming part of and extending across the twisting and winding apparatus. Slidably mounted on shaft 12 are a pair of spaced bushings 16 and 17 which are fixed to a dependent member 18, the latter being suitably attached to bracing section 9 as by welding, or the like, along that portion below plate 7 and lip 10. The assembly comprising ring 5, ring holder 6 and plate 7 together with bracing member 8, bracing section 9 and member 18 depending therefrom is caused to be reciprocated as a unit by beam 15 which is vertically reciprocated by suitable means (not shown). Plate 7, and particularly lip 10 thereof, though physically unattached to beam 15, is maintained in contact therewith through the medium of a tensioned spring 19. One end of spring 19 passes around a stud 20 set in bushing 17 and the other end is attached to a bracket 21 fixed to the lower surface of beam 15 as by a screw 22. The force exerted by tensioned spring 19 is sufficient to maintain lip 10 and beam 15 in a constant spring-loaded surface contact and to prevent any play therebetween.

The bobbin upon which the yarn is wound to form the desired yarn package, which bobbin is indicated by reference numeral 23, is supported on a spindle 24 rotated at high speed by suitable driving means (not shown) in the normal manner well-understood in the art. The desired type of wind on the bobbin 23 is produced by the combined reciprocating vertical traverse, or chaser motion, of beam 15 with that of spindle 24, which is provided with a reciprocating vertical, or builder movement in timed relation to that of beam 15.

The builder motion of spindle 24 is achieved through the action of a pinion 25 keyed to a shaft 26 and meshing with a rack 27 mounted on the bolster 28 of the spindle assembly. Shaft 26 is provided with driving means (not shown) adapted to be reversed in timed relation to the

traverse of beam 15, producing a yarn package of a preferred open or cover wind, which type of wind possesses particularly valuable characteristics. The entire spindle assembly is supported on a heavy, braced, cross-piece 29. A more detailed description of the manner in which the builder motion is superimposed upon the chaser motion to produce the unusually advantageous cover wind on the bobbin, is given in U. S. Patent No. 2,357,406.

To provide the desired magazine wrap or transfer tail during application of the cover wind, the operator halts the spindle by depressing brake handle 30 bringing brake shoe 31 in contact with the spindle base 32, doffs the full package, replaces it with an empty bobbin in the usual manner and then throws on the yarn to start the wind. As soon as the yarn 2 begins to wind on to bobbin 23 and the traverse of the beam 15 is on the downward motion, plate 7 is depressed by hand against the tension of spring 19 so that bushings 16 and 17 slide in a downward direction along shaft 12. Plate 7 is forced downward until it comes in contact with adjustable stop 33 thus moving lip 10 out of contact with beam 15. The downward movement of plate 7 carries the ring and traveler to a position just below the normal traverse of the yarn 2 as provided by the combined reciprocating vertical builder motion of the spindle 24 and the chaser motion of the traversing beam 15. This movement of plate 7 places the latter in position indicated by reference numeral 7' and brings the ring 5 to position indicated by reference numeral 5'. With ring 5 in position 5' the yarn 2 winds on and forms a magazine wrap or transfer tail 34 at the base of bobbin 23. As soon as the desired magazine wrap or transfer tail 34 is formed, the operator releases plate 7 and the action of spring 19 draws plate 7 upward from position 7' so that lip 10 is again in contact with the lower surface of beam 15. In this position yarn 2 then commences to wind on to bobbin 23 in the normal manner and the combined builder and chaser motion of the spindle 24 and beam 15 causes the yarn to build up in the form of the desired yarn package.

The magazine wrap or transfer tail 34 thus placed on the yarn support is well separated from the main body of the yarn and is readily available as a transfer tail.

While our invention has been more particularly described in connection with a twisting and winding apparatus in which both the ring rail and spindle are provided with a reciprocating vertical movement or traverse so as to produce a cover wind in the yarn package formed, it is to be understood that our novel apparatus is equally applicable to a twisting and winding device in which only the ring rail reciprocates to build up the yarn package.

It is to be understood that the foregoing detailed description is given merely by way of illustration and that many variations may be made therein without departing from the spirit of our invention.

Having described our invention, what we desire to secure by Letters Patent is:

1. In a device for winding yarn on to rotating yarn holders for producing yarn packages having a transfer tail, the combination with a reciprocating beam, of means in surface contact therewith, a ring holder on said means, a spinning ring in said ring holder and a traveler for winding yarn on a rotating yarn holder, said means being positioned below and normally reciprocating with said beam and being adapted to be depressed below the normal traverse of said reciprocating beam with respect to the yarn holder, so as to cause the winding of a relatively small amount of yarn on the yarn holder at a point spaced from the main body of yarn, said small amount of yarn being available for use as a transfer tail.

2. In a device for winding yarn on to rotating yarn holders for producing yarn packages having a transfer tail, the combination with a reciprocating beam, of a plate in surface contact therewith, a ring holder on said plate, a spinning ring in said ring holder and a traveler for winding yarn on a rotating yarn holder, said plate being positioned below and normally reciprocating with said beam and being adapted to be depressed below the normal traverse of said reciprocating beam with respect to the yarn holder, so as to cause the winding of a relatively small amount of yarn on the yarn holder at a point spaced from the main body of yarn, said small amount of yarn being available for use as a transfer tail.

3. In a device for winding yarn on to rotating yarn holders for producing yarn packages having a transfer tail, the combination with a reciprocating beam, of a plate in surface contact therewith, a ring holder on said plate, a spinning ring in said ring holder and a traveler for winding yarn on a rotating yarn holder, said plate being positioned below and normally reciprocating with said beam and being adapted to be depressed below the normal traverse of said reciprocating beam with respect to the yarn holder, so as to cause the winding of a relatively small amount of yarn on the yarn holder at a point spaced from the main body of yarn, said small amount of yarn being available for use as a transfer tail.

4. In a device for winding yarn on to rotating yarn holders for producing yarn packages having a transfer tail, the combination with a reciprocating beam, of a plate in surface contact therewith, a ring holder on said plate, a spinning ring in said ring holder and a traveler for winding yarn on a rotating yarn holder, said plate being positioned below and normally reciprocating with said beam, and spring means for maintaining said plate and reciprocating beam in surface contact, whereby said plate under downward pressure may be depressed to a position spaced from said beam and below the normal traverse of said beam with respect to the yarn holder, so as to cause the winding of a relatively small amount of yarn on the yarn holder at a point spaced from the main body of yarn, said small amount of yarn being available for use as a transfer tail.

5. In a device for winding yarn on to rotating yarn holders for producing yarn packages having a transfer tail, the combination with a reciprocating beam, of a plate in surface contact therewith, a ring holder on said plate, a spinning ring in said ring holder and a traveler for winding yarn on a rotating yarn holder, said plate being positioned below and normally reciprocating with said beam, spring means for maintaining said plate and reciprocating beam in surface contact, and means for guiding said plate along a vertical path below said beam whereby said plate under downward pressure may be depressed to a position spaced from said beam and below the normal traverse of said beam with respect to the yarn

holder, so as to cause the winding of a relatively small amount of yarn on the yarn holder at a point spaced from the main body of yarn, said small amount of yarn being available for use as a transfer tail.

6. In a device for winding yarn on to rotating yarn holders for producing yarn packages having a transfer tail, the combination with a reciprocating beam, of a plate in surface contact therewith, a ring holder on said plate, a spinning ring in said ring holder and a traveler for winding yarn on a rotating yarn holder, said plate being positioned below and normally reciprocating with said beam, spring means for maintaining said plate and reciprocating beam in surface contact, and means for guiding said plate along a vertical path below said beam, and adjustable stop means for limiting the movement of said plate whereby said plate under downward pressure may be depressed to a position spaced from said beam and below the normal traverse of said beam with respect to the yarn holder, so as to cause the winding of a relatively small amount of yarn on the yarn holder at a point spaced from the main body of yarn, said small amount of yarn being available for use as a transfer tail.

7. In a device for winding yarn on to rotating yarn holders carried on rotating spindles having a traversing builder motion so as to produce yarn packages having a transfer tail, the combination with a reciprocating beam describing a chaser motion independent of the builder motion of the spindles, of means in surface contact with said reciprocating beam, a ring holder on said means, a spinning ring in said ring holder and a traveler for winding yarn on a rotating yarn holder, said means being positioned below and normally reciprocating with said beam and being adapted to be depressed below the normal traverse of said reciprocating beam with respect to the yarn holder, so as to cause the winding of a relatively small amount of yarn on the yarn holder at a point spaced from the main body of yarn, said small amount of yarn being available for use as a transfer tail.

8. In a device for winding yarn on to rotating yarn holders carried on rotating spindles having a traversing builder motion so as to produce yarn packages having a transfer tail, the combination with a reciprocating beam describing a chaser motion independent of the builder motion of the spindles, of a plate in surface contact with said reciprocating beam, a ring holder on said plate, a spinning ring in said ring holder and a traveler for winding yarn on a rotating yarn holder, said plate being positioned below and normally reciprocating with said beam and being adapted to be depressed below the normal traverse of said reciprocating beam with respect to the yarn holder, so as to cause the winding of a relatively small amount of yarn on the yarn holder at a point spaced from the main body of yarn, said small amount of yarn being available for use as a transfer tail.

9. In a device for winding yarn on to rotating yarn holders carried on rotating spindles having a traversing builder motion so as to produce yarn packages having a transfer tail, the combination with a reciprocating beam describing a chaser motion independent of the builder motion of the spindles, of a plate in surface contact with said reciprocating beam, a ring holder on said plate, a spinning ring in said ring holder, and a traveler for winding yarn on a rotating yarn holder and means for holding said plate in surface contact with said reciprocating beam, said plate being positioned below and normally reciprocating with said beam and being adapted to be depressed below the normal traverse of said reciprocating beam with respect to the yarn holder, so as to cause the winding of a relatively small amount of yarn on the yarn holder at a point spaced from the main body of yarn, said small amount of yarn being available for use as a transfer tail.

10. In a device for winding yarn on to rotating yarn holders carried on rotating spindles having a traversing builder motion so as to produce yarn packages having a transfer tail, the combination with a reciprocating beam describing a chaser motion independent of the builder motion of the spindles, of a plate in surface contact therewith, a ring holder on said plate, a spinning ring in said ring holder and a traveler for winding yarn on a rotating yarn holder, said plate being positioned below and normally reciprocating with said beam, and spring means for maintaining said plate and reciprocating beam in surface contact, whereby said plate under downward pressure may be depressed to a position spaced from said beam and below the normal traverse of said beam with respect to the yarn holder, so as to cause the winding of a relatively small amount of yarn on the yarn holder spaced from the main body of yarn, said small amount of yarn being available for use as a transfer tail.

11. In a device for winding yarn on to rotating yarn holders carried on rotating spindles having a traversing builder motion so as to produce yarn packages having a transfer tail, the combination with a reciprocating beam describing a chaser motion independent of the builder motion of the spindles, of a plate in surface contact therewith, a ring holder on said plate, a spinning ring in said ring holder and a traveler for winding yarn on a rotating yarn holder, said plate being positioned below and normally reciprocating with said beam, spring means for maintaining said plate and reciprocating beam in surface contact, and means for guiding said plate along a vertical path below said beam whereby said plate under downward pressure may be depressed to a position spaced from said beam and below the normal traverse of said beam with respect to the yarn holder, so as to cause the winding of a relatively small amount of yarn on the yarn holder at a point spaced from the main body of yarn, said small amount of yarn being available for use as a transfer tail.

12. In a device for winding yarn on to rotating yarn holders carried on rotating spindles having a traversing builder motion so as to produce yarn packages having a transfer tail, the combination with a reciprocating beam describing a chaser motion independent of the builder motion of the spindles, or a plate in surface contact therewith, a ring holder on said plate, a spinning ring in said ring holder and a traveler for winding yarn on a rotating yarn holder, said plate being positioned below and normally reciprocating with said beam, spring means for maintaining said plate and reciprocating beam in surface contact, means for guiding said plate along a vertical path below said beam, and adjustable stop means for limiting the movement of said plate whereby said plate under downward pressure may be depressed to a position spaced from said beam and below the normal traverse of said beam with respect to the yarn holder, so as to cause the winding of a relatively small amount of yarn on the yarn holder at a point spaced

from the main body of yarn, said small amount of yarn being available for use as a transfer tail.

13. In a device for winding yarn on to rotating yarn holders for producing yarn packages having a transfer tail, the combination with a reciprocating beam, a plate in surface contact with said reciprocating beam, a ring holder on said plate, a spinning ring in said ring holder and a traveler for winding yarn on a rotating yarn holder, said plate being positioned below and normally reciprocating with said beam and being adapted to be manually depressed below the normal traverse of said reciprocating beam with respect to the yarn holder, so as to cause the winding of a relatively small amount of yarn on the yarn holder at a point spaced from the main body of yarn, said small amount of yarn being available for use as a transfer tail.

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