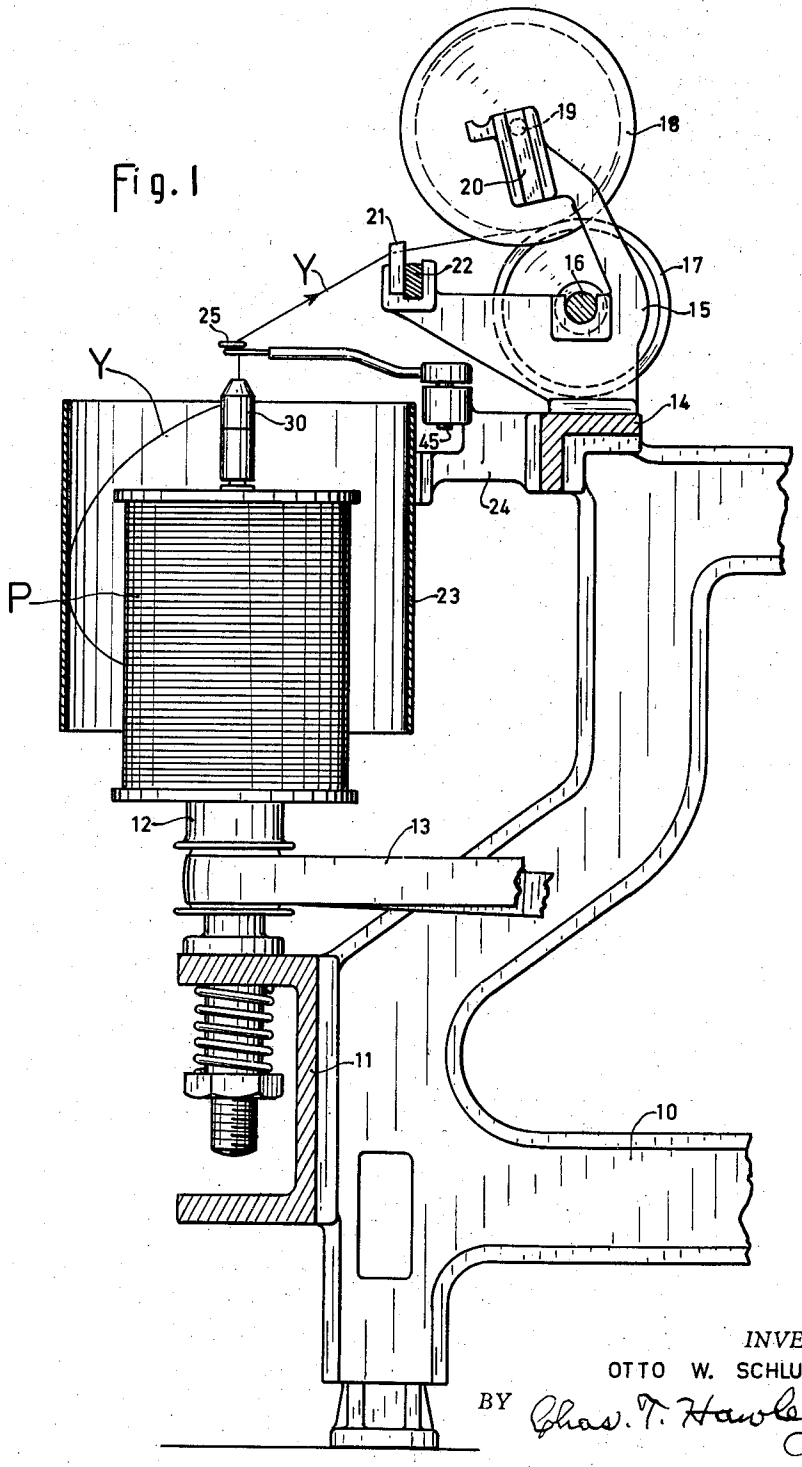
July 22, 1958 O. W. SCHLUMS 2,843,998

YARN TWIST CONTROLLER

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Fig. 1



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Fig. 2

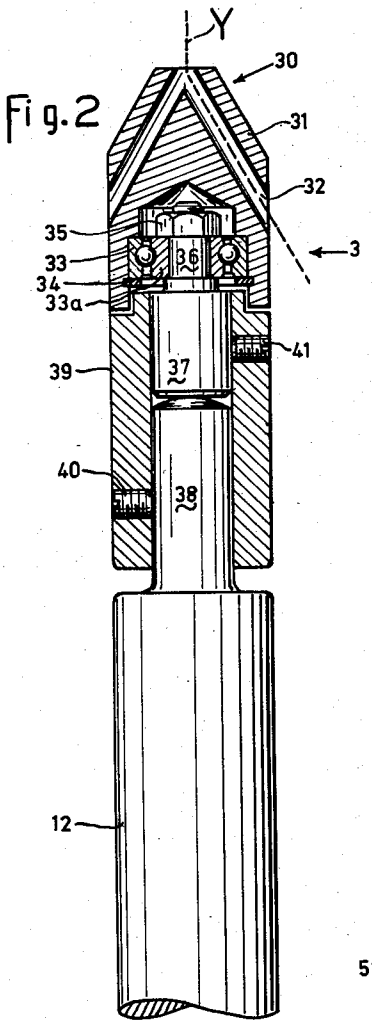


Fig. 3

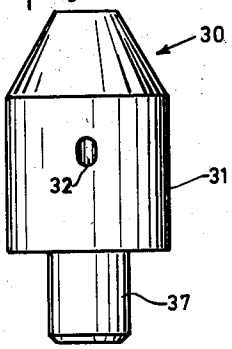


Fig. 4

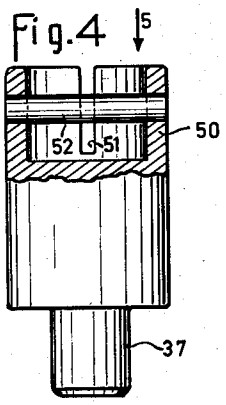


Fig. 5

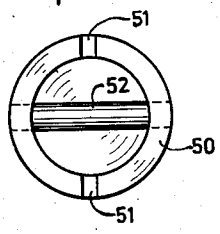


Fig. 6

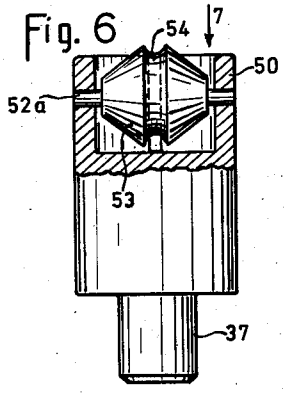
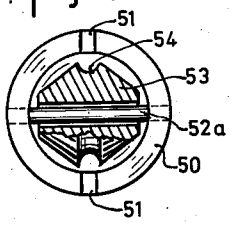


Fig. 7



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YARN TWIST CONTROLLER

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Application February 5, 1957, Serial No. 638,393

3 Claims. (Cl. 57—59)

This improvement relates to devices for use in textile machines of the up-twister type.

In such machines, a flier is usually mounted on the upper end of the spindle for controlling the twist as the yarn is unwound from the supply package or spool which is mounted on and rotates with the spindle.

A typical flier construction is shown in U. S. Patent No. 1,547,813, and this type of control operates satisfactorily at conventional spindle speed. When the spindle speed is substantially increased, however, excessive twist variation occurs in the yarn, and there is also increased yarn breakage. This earlier type of flier must also be removed from the spindle each time the supply package or spool is exhausted and replaced.

The general object of this improvement is to enable up-twisters to operate at spindle speeds much higher than now common, and also to maintain uniform twist in the yarn.

A further object of the invention is to enable the supply spool to be put on and to be taken off of the spindle without displacing the twist controller.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

Referring to the drawings:

Fig. 1 is a vertical section of part of an up-twister, and showing the improved twist controller applied thereto;

Fig. 2 is an enlarged vertical section of the twist controller as mounted on a spindle;

Fig. 3 is a side view of the twist controller, looking in the direction of the arrow 3 in Fig. 2;

Fig. 4 is a partial sectional elevation showing a modification;

Fig. 5 is a plan view, looking in the direction of the arrow 5 in Fig. 4;

Fig. 6 is a partial sectional elevation showing a further modification; and

Fig. 7 is a plan view, looking in the direction of the arrow 7 in Fig. 6.

As shown in Fig. 1, the up-twister comprises a frame 10 having a rail 11 on which is mounted a plurality of spindles 12 rotated by belts 13 from a power source not shown. The frame 10 also supports a rail 14 on which a plurality of brackets 15 are mounted. These brackets provide spaced bearings for a continuously rotated shaft 16.

Secured to the shaft 16 and between each pair of brackets 15 is a winding drum 17. Take-up spools 18 rest upon the drums 17 and are rotated thereby. These take-up spools have end gudgeons 19 which are slidable in guide grooves 20 in the brackets 15.

Associated with each drum 17 is a guide 21, secured to a traverse bar 22 which is slidably supported by the brackets 15. The bar 22 is reciprocated by any usual and suitable mechanism in timed relation to the speed of the winding drums 17.

A balloon-restricting cylinder 23 freely surrounds each

spindle 12 and is attached to a bracket 24 which is fastened to the rail 14. A yarn guide 25 is also swingably mounted on the bracket 24.

The construction thus far described is of conventional type.

This improved twist controller consists of a unit 30 which is freely rotatable on the upper end of the spindle 12. The unit 30 comprises a head 31 (Fig. 2) provided with an inclined opening 32 through which the yarn Y passes upward from the supply package P (Fig. 1) to the take-up spool 18. A plurality of equally spaced openings 32 are preferably provided to maintain a well-balanced load on the rapidly rotated spindle 12.

The head 31 is recessed to receive an anti-friction bearing 33 which is held therein by a snap ring 34. The inner race 33*a* of the bearing 33 is secured by a nut 35 to the reduced upper end 36 of a stud 37.

The upper end of the spindle 12 has a reduced portion 38 to which a sleeve 39 is secured by a screw 40. The stud 37 is inserted in the upper end of the sleeve 39 and is normally held therein by a screw 41. A separate and freely-rotatable yarn-guiding head or twist controller 30 is thus operatively associated with each spindle 12.

In starting the twisters, the yarn Y from the supply spool P is threaded through one of the openings 32 in the twist controller 30 and is then passed upward through the yarn guide 25 and the traversing guide 21 to the take-up spool 18.

When the yarn supply on the spool P is exhausted, the yarn guide 25 is swung upon its pivot 45 until it clears the fixed balloon-restricting cylinder 23, whereupon the supply spool P can be removed and replaced without removing the unit 30 from the spindle 12, as the sleeve 39 and head 31 do not exceed the spool-supporting diameter of the spindle 12.

The type of twist controller 30 shown in Fig. 2 has proved quite satisfactory in the twisting of all sizes of yarn, but the upper part of the twist controller can be modified to particularly adapt the invention to very coarse yarns or to very fine yarns.

Figs. 4 and 5 show a modified twist controller especially suitable for coarse yarns, and Figs. 6 and 7 show a twist controller most suitable for very fine yarns. Both of the modified devices are provided with anti-friction mountings similar to the one shown in Fig. 2.

The upper part of the twist controller 50 (Figs. 4 and 5) for coarse yarns is recessed to form a circular wall provided with slots 51 and having transverse openings to receive a cross-pin 52. The yarn from the supply spool is threaded through one of the slots 51 and under the pin 52 before the yarn passes to the yarn guide 25 and the transverse guide 21.

The upper part of the twist controller for very fine yarns (Figs. 6 and 7) is somewhat similar to that shown in Fig. 4 but includes a roll 53 having a circumferential groove 54 and freely rotatable on the pin 52*a*. The yarn is guided by the groove 54 as the yarn passes to the yarn guide 25. The freely rotatable roll 53 is found to prevent yarn breakage when twisting very fine or delicate yarns.

These three twist controllers can be used selectively and as desired. To change from one controller to another, the screw 41 in the sleeve 39 is first loosened to allow the stud 37 of the controller then on the spindle to be lifted out of the sleeve 39. The stud 37 of the selected controller is then inserted in the sleeve 39 and held therein by again tightening the screw 41. The diameter of the sleeve 39 and the diameter of the heads of all the twist controllers are not greater than the diameter of the spindle 12, so that the supply packages P can be easily removed and replaced on the spindle 12.

Anyone of the twist controllers enables the machine to operate at substantially higher speeds than formerly, and the yarn twist is under such control that the yarn wound on the take-up spool **18** has little or no twist variation. These twist controllers are of very simple construction.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. In an up-twister having a driven spindle supporting and rotating a yarn package and having means to withdraw yarn upward from said yarn package, in combination, a controller comprising a control unit having a cross passage to receive yarn from said package and having an axially-disposed and upwardly-opening yarn delivery port, and said yarn controller being rotatably mounted on the spindle and comprising a hollow cylindrical wall portion with vertically extended and diametrically opposed slots therein, and with a cross-pin mounted in said wall portion and extending from said to side of said wall portion and perpendicular to the plane of said slots.

2. The combination in a yarn controller for an up-twister as set forth in claim 1, in which a grooved guide roll is mounted on the cross-pin and within said cylindrical wall portion.

3. The combination in a yarn controller for an up-twister as set forth in claim 1, in which a double conical grooved guide-roll is mounted on said cross-pin and within said wall portion.

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