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REGULATOR RELEASE MEANS

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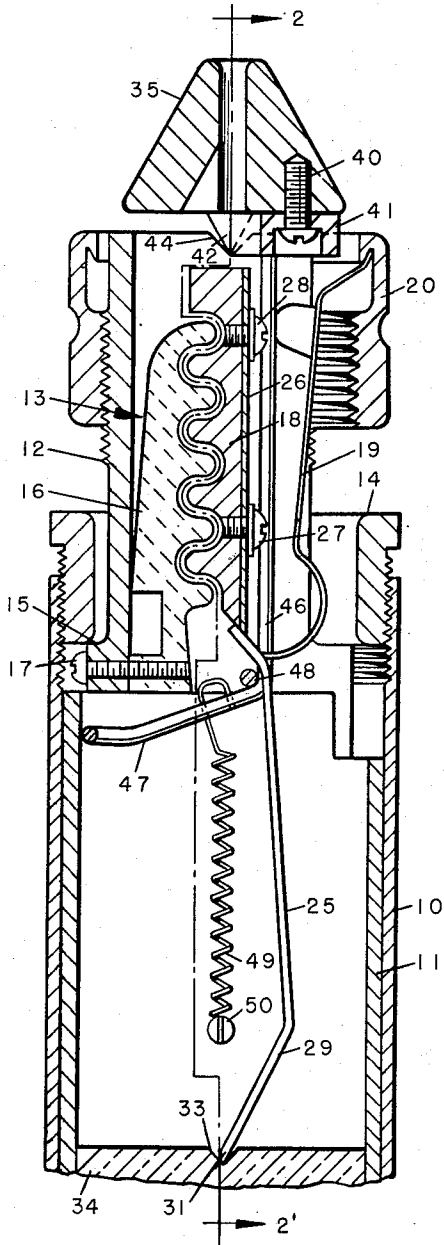


FIG. -1-

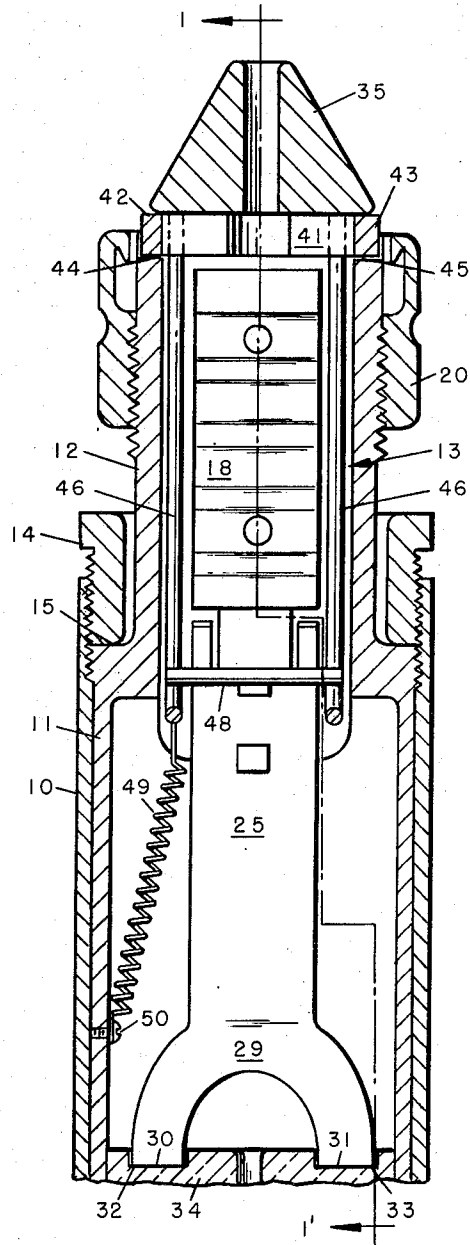


FIG. -2-

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REGULATOR RELEASE MEANS

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8 Claims. (Cl. 242—154)

This invention relates to improvements in yarn tension regulators and more particularly the invention relates to release means for regulators of the type adapted for operation inside the pedestal of a textile twisting machine.

Certain textile twisting machines are provided with a centrally positioned pedestal carried by a stationary platform which in turn is carried by a rapidly rotating spindle. The centrally positioned pedestal serves as a support over which a bobbin is placed and for maximum efficiency the pedestal should be equal in length or only slightly longer than the bobbin which it is adapted to receive. The centrally positioned pedestal also serves to enclose a yarn tension regulating device for tensioning a yarn end running from or to the bobbin and through the pedestal.

While any one of several different types of tension control regulators can be employed in the pedestal of a twisting device such as described above, the type generally considered to offer the best control comprises at least one pair of yarn engaging members between which the yarn is passed. The surface area in contact with the yarn as it passes between the two members is dependent on the distance between the members and so that this may be automatically varied, at least one of the members is generally attached to a pivot arm or the like whereby it is movable with respect to the stationary member. Such tension regulators, however, suffer from the disadvantage, when placed in a pedestal of the type found in twisting apparatus, that they make threading of the apparatus extremely difficult. The passageway between the two members when in operating position is generally tortuous and cannot readily be penetrated by a threading tool without first separating the members or releasing the regulator in some other manner.

It is a primary object of this invention to provide improved release means for a yarn tension regulator of the type having a stationary yarn engaging member and a movable yarn engaging member so that the regulator may be readily threaded for operation when positioned within the pedestal of a textile twisting machine.

It is a further object of the invention to provide a release means for a yarn tension regulator to be placed within the pedestal of a textile twisting machine that permits the use of a bobbin of a length substantially equal to that of the pedestal.

It is a further object of the invention to provide a tension regulator release means which results in no protrusions from the pedestal which might snag the yarn or gather lint.

The above as well as other objects of the invention are accomplished by the provision of an annular member adapted to be positioned on the exposed end of the pedestal. The annular member is preferably similar in design to the conventional pedestal cap except that it is mounted for limited movement and carries a lever or the like which extends into the pedestal. The lever is ordinarily out of contact with any part of the tension regu-

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lator proper but contacts the movable yarn engaging member, preferably through its supporting pivot arm, and moves it in such a manner as to release the tension regulator when the arcuate member is properly manipulated.

One embodiment of the invention will now be more specifically described with reference to the accompanying drawings in which:

Figure 1 is a sectional view, taken substantially along the line 1—1 of Figure 2, of a portion of a twister pedestal enclosing a yarn tension control device provided with release means according to this invention.

Figure 2 is a sectional view of the pedestal taken substantially along the line 2—2 in Figure 1.

With reference to the drawings in greater detail, the numeral 10 indicates the outer housing of the pedestal of a textile twisting machine which may be of the type disclosed in my copending application Serial Number 244,812, filed September 1, 1951. The outer housing 10 is carried by the package support platform of the twister (not illustrated) and is adapted to fit within the central bore of a bobbin.

Positioned partially within the housing 10 is a cylindrical member generally indicated by the reference numeral 11 and having an exposed extension 12 of smaller diameter. The member 11 constitutes the pedestal proper and serves as a housing for the yarn tension regulating device which is generally indicated by the reference numeral 13. A collar 14 threaded into the upper end of housing 10 bears upon a flange at 15 and serves to properly secure member 11 in position.

The tension regulator 13 comprises a stationary member 16 which is rigidly secured by any suitable means such as by screw 17 to the cylindrical member 11. Co-operating with the stationary yarn engaging member 16 is a movable yarn engaging member 18 which is urged toward the stationary member 16 by a spring such as indicated by the reference numeral 19. The spring 19 is so disposed that the force with which member 18 is urged toward member 16 decreases as the distance between the two members is increased and therefore when a strand of yarn is threaded between the two members, the output tension in the yarn tends to remain substantially constant even with large variations in input tension as will be readily understood by those skilled in the art. The output tension in the yarn can be varied by adjusting the tension in spring 19 by means of a collar 20 which is threaded onto the upper end of extension 12 of member 11 and is of such diameter that it will fit freely into the bore of a bobbin.

So that the position of member 18 with respect to member 16 may be varied, there is provided a pivot arm 25 the upper end of which is rigidly affixed to a plate 26 secured to the back of member 18 by any suitable means such as by screws 27 and 28. The pivot arm 25 is provided with a bifurcated base 29 the legs of which terminate as knife edges 30 and 31. The knife edges 30 and 31 rest in a pair of notches 32 and 33 in the upper edge of a cylindrical platform 34 and as will be seen this arrangement permits limited movement of member 19 about the axes of knife edges 30 and 31.

Positioned atop the pedestal is a yarn guide cap 35 having the shape of a centrally bored truncated cone. Secured to the flat base of the pedestal cap by any suitable means such as by a screw 40, is a support member 41 having a pair of downwardly facing knife edges 42 and 43 adapted to rest in a pair of corresponding grooves 44 and 45 in the upper rim of the member 11. Extending downwardly into the pedestal from either side of support member 41 is a lever arm 46 having the general shape of a U. The arm 46 is provided with a laterally

extending section 47 adapted to contact the inner wall of the member 11 when cap 35 is in normal operating position and a cross bar 48 adapted to contact the pivot arm 25 when cap 35 is turned about its pivot thereby forcing member 18 away from member 16. The laterally extending end of lever arm 46 is normally held in contact with the pedestal wall by a spring 49 attached at one end to the lever arm and at the other end to the inner wall of member 11 by means of a screw 50 thereby retaining cross bar 48 out of contact with pivot arm 25 when cap 35 is in normal operating position.

In operation, a threading tool having an attached yarn end is inserted into the central bore of cap 35. Cap 35 is then pivoted on knife edges 42 and 43 which results in cross member 48 contacting pivot arm 25 thereby moving member 18 out of engagement with member 16. The yarn threading tool can then be readily passed between the members 16 and 18 thereby threading the yarn end into its proper path. On release of the cap 35, spring means 49 urges lever arm 46 to return to its normal position with cross bar 48 out of contact with pivot arm 25 and extension 47 resting against the inner wall of the pedestal. Cap 35 is thereby retained in normal operating position until it is necessary to again thread the yarn tension regulating means.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. The combination with a tension regulator mounted within the tubular pedestal of a textile twisting machine and comprising a fixed yarn engaging member and a movable yarn engaging member cooperating therewith, of a pedestal cap, said cap having the shape of a centrally bored truncated cone, a pair of knife edge members mounted on the base of said cap and positioned to rest on opposite sides of the exposed end of said pedestal, thereby permitting pivotal movement of said cap with respect to said pedestal, means movable with said cap to engage and separate said movable yarn engaging member from said fixed member to thereby facilitate threading, and means to normally retain said cap in a position to result in said first named means being out of contact with said movable yarn engaging member.

2. A combination according to claim 1 wherein said first named means comprises a generally U-shaped lever arm extending on either side of said tension regulator and said last named means comprises a spring extending from said arm to the inner wall of said pedestal.

3. In combination with a tension regulator mounted within the tubular pedestal of a textile machine and comprising a first yarn engaging member, a second yarn engaging member cooperating therewith, and a pivot arm attached to said second member whereby said second member is capable of limited movement about an axis, means comprising a pivotally supported annular member positioned on the exposed end of said pedestal and lever means carried by said annular member and extending within said pedestal to engage said pivot arm when said arcuate member is pivoted.

4. Tension regulator release means according to claim 3 wherein said annular member is a centrally bored conical yarn guide.

5. In combination with a tension regulator mounted

within the tubular pedestal of a textile twisting machine and comprising a first yarn engaging member, a second yarn engaging member cooperating therewith and a pivot arm attached to said second member whereby said second member is capable of limited movement about an axis remote therefrom, improved tension regulator release means comprising a pedestal cap provided with a pair of knife edges resting on opposite sides of the exposed end of said pedestal, a lever arm extending from the base of said cap within said pedestal, means carried by said lever arm for contacting said pivot arm when said yarn guide is pivoted whereby said second member is separated from said first member, and spring means to normally retain said last named means out of contact with said pivot arms.

6. Tension regulator release means according to claim 5 wherein said lever arm has an extending section urged against the inner wall of said pedestal by said spring means and which contacts said inner wall when the base of said cap is at substantially right angles to the longitudinal axis of said pedestal.

7. The combination with a tension regulator mounted within the tubular pedestal of a textile twisting machine and including a pair of yarn engaging members movable relative to each other, and biasing means urging operative engagement of said yarn engaging members with each other; of a spatially displaceable, centrally bored pedestal cap positioned on the end of said pedestal, means movable with said cap to engage at least one of said yarn engaging members and separate said yarn engaging members from operative engagement with each other, when said cap is displaced from normal operating position, to thereby facilitate threading, and biasing means to normally retain said cap in a position such that said last named means is disengaged from said movable yarn engaging members.

8. The combination with a tension regulator mounted within the tubular pedestal of a yarn twisting machine and having a first yarn engaging member, a second yarn engaging member cooperating therewith, a pivot arm attached to said second member, whereby said second member is capable of limited pivotal movement about an axis remote therefrom, and biasing means urging said second yarn member into operative engagement with said first yarn engaging member; of a spatially displaceable, centrally bored pedestal cap positioned on the end of said pedestal, means movable with said cap for contacting said pivot arm, when said cap is displaced from normal operating position, to thereby separate said second member from said first member, biasing means urging said last named means out of contact with said pivot arm, and a movable annular member circumscribing said tubular pedestal for varying the force with which said second yarn engaging member is urged toward said first yarn engaging member during normal operation of the tension regulating device.

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