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BALLOON CONTROL RING

Filed May 5, 1961

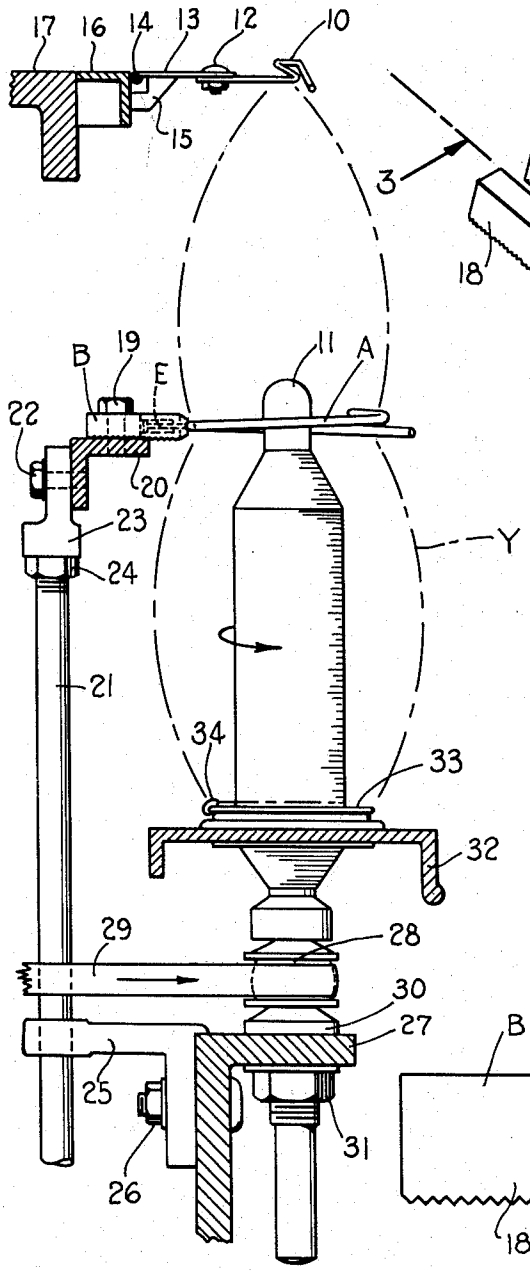


Fig. 1.

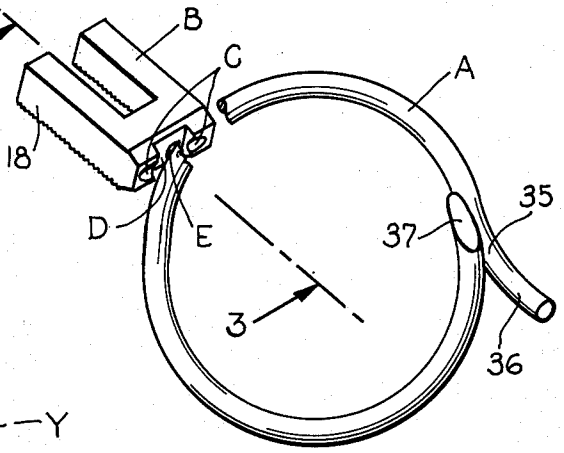


Fig. 2.

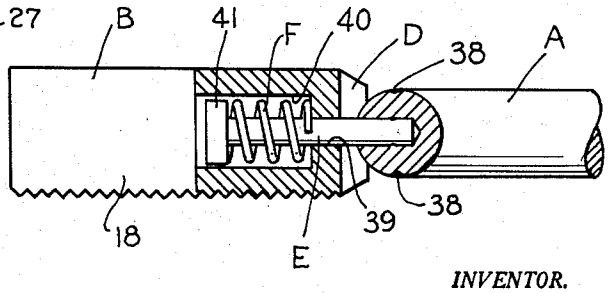


Fig. 3.

INVENTOR.
JAMES S. RUSSELL
BY
ATTORNEY

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BALLOON CONTROL RING

James S. Russell, Greer, S.C., assignor to Steel Heddle Manufacturing Company, Paris, S.C., a corporation of Pennsylvania

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This invention relates to balloon control rings and more especially to an improved balloon control ring which may be easily reversed or turned over when changing the direction of ration of a strand being delivered to the package.

Balloon control rings are provided for limiting the size of the balloon of a strand being wound upon a package upon a strand winding machine such as a twister, spinning frame and the like. Such rings are so constructed that they may be easily threaded and remain threaded while the strand is being wound upon a package. However, should the direction of the winding of the strand be changed such as from the reverse wind illustrated to a regular wind, the ring will become easily unthreaded by movement of the strand out of the threading passage unless the ring is reversed or turned through an angle of 180 degrees. One ring is normally positioned adjacent each spindle by bolting a shank carrying the ring to a rail between the yarn guide and the ring rail. When changing the direction of rotation of the yarn it is an exceedingly lengthy and tedious task to unbolt the shank connections of the balloon control rings, turn the rings through an angle of 180 degrees and then bolt same in place again. This invention is addressed to the problem of avoiding the laborious and time consuming nature of the task of reversing balloon control rings by providing an improved balloon control ring structure. Prior attempts to solve this problem have resulted in structure too complicated to come into general use.

An important object of the invention, therefore, is to simplify the task of reversing balloon rings preparatory to a change of direction in the rotation of a strand.

Another object of the invention is to provide a balloon ring connected to the shank in such a way that the ring may be turned without unfastening the shank of the ring.

Another important object of the invention is to avoid the necessity for unfastening the shank of a balloon control ring when reversing the ring and yet provide a positive fixed mounting means for the ring wherein the ring engages a recessed portion of the shank.

Another object of the invention is the provision of spaced recessed portions in the shank of a balloon ring engaging the ring in spaced contacts which permits reversing the ring by simply turning same against resilient means connecting the ring and the shank.

The construction designed to carry out the invention will be hereinafter described, together with other features thereof.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawing forming a part thereof, wherein an example of the invention is shown and wherein:

FIGURE 1 is a transverse sectional view through a spinning frame illustrating a spindle mounting equipped with a balloon control ring constructed in accordance with the present invention,

FIGURE 2 is an enlarged perspective view illustrating a balloon control ring, constructed in accordance with the present invention, and

FIGURE 3 is an enlarged longitudinal sectional view taken on the line 3—3 in FIGURE 2.

A preferred embodiment of the invention is illustrated and includes a substantially circular ring portion A having a threading opening therein, a shank B for said ring and a pair of spaced recessed portions C for supporting the ring A by engaging both sides of the ring portion. The shank B has an intermediate transverse recessed portion D to insure spaced contact with the ring A. Elongated means E connect the ring and the shank, said means being integral with the ring and extending radially therefrom on an axis passing through the center of the ring so that the ring is supported in balanced relation with its support. The shank B and the ring portion A are connected by a spring biased plunger E so that the ring is capable of being biased or cammed away from the shank when turned so that the ring portion A is disengaged from the recessed portion or seat C. The plunger E has fixed connection on one end with the ring A and is slidably positioned within the shank B against the force of resilient means F carried therein. It is evident that it is a simple matter to turn the ring A away from the spaced recessed portions C so as to disengage the sides of the ring from their seat and permit the plunger E carrying the ring A to be rotatable through 180 degrees and to allow the ring to again seat within the recesses C. The shank B has a bifurcated portion for bolting same to the yarn winding machine.

FIGURE 1 shows yarn Y being fed from a suitable source such as a spinning frame drafting system (not shown) being fed downwardly through a pigtail guide **10** and being wound upon a suitable yarn carrier **11**. The pigtail guide is fastened as by the bolt **12** to a lappet **13**. The lappet **13** is pivoted as at **14** and is supported by the bracket **15**. The bracket **15** and the hinge **14** are carried by a rail **16** which is mounted upon the beam **17** of the spinning frame. The shank B has a bifurcated portion **18** which accommodates a bolt **19** for fixedly securing the shank upon a rail **20**. The rail **20** is fixed to the upper portion of a traversing rod **21** as by a bolt **22**. The upper portion **23** of the rod **21** is adjustable and is locked into position by the nut **24**. The rod **21** has suitable support with respect to the spinning frame including a bracket **25** fixed by the bolt **26** to the bolster rail **27** of the spinning frame. The traversing rail slides in the bracket **25** and positions the balloon control ring A in an intermediate position between the pigtail guide **10** and the ring rail (described below) for effectively controlling the balloon of the yarn being wound at all times.

The spindle **11** is rotated by the whorl **28** driven by the spinning tape **29**. The spindle housing **30** is tightly fixed with respect to the bolster rail **27** by the lock nut **31**. The yarn Y balloons by the action of centrifugal force causing the yarn to depart from the longitudinal axis of the bobbin as indicated by broken lines in FIGURE 1. The yarn Y is distributed upon the bobbin by the traversing action of the ring rail **32** which carries the ring **33** and the usual traveler **34** for controlling the yarn. The balloon ring A has a threading slot **35** formed by an outwardly projecting guiding portion **36** of the ring and an adjacent reduced portion **37** of the ring.

The ring A has fixed connection with the plunger E as by swaging **38**. The shank B has a bore **39** for accommodating the plunger E for sliding and turning movement therein. The shank B has an enlarged bore **40** for accommodating resilient means F in the form of a coiled spring. The coiled spring is confined within the bore **40** by the abutment **41** fixed to the free end of the plunger E. It is evident that the recesses C provide support for the ring A on both sides thereof and yet permit same to be easily turned 180 degrees and again seated. The intermediate recess D provides a spaced contact for seating the ring A.

While a preferred embodiment of the invention has been described using specific terms, such description is for

illustrative purposes only, and it is to be understood that changes and variations may be made without departing from the spirit or scope of the following claims.

What is claimed is:

1. A balloon control ring comprising a substantially enclosed strand confining member having a threading slot about its periphery, a shank having an intermediate recess and first and second spaced seats in the side walls defining said recess in which first and second portions of the periphery of said member, remote from said slot, are alternatively supported in first and second positions, said first position being when said first portion is in said first seat and second portion is in said second seat and said second position being when said first portion is in said second seat and said second portion is in said first seat, means biasing said portions of the periphery into said depressions, a shaft extending outwardly from said member at a point between said first and second portions rotatably supporting said member to said shank whereby the strand confining member can be unseated against the force of said means and rotated to either of said first and second positions.

2. The balloon control ring defined in claim 1 wherein said shaft includes a rod connected to said member at one end and including an abutment at the other end, said shank having a chamber in which said abutment is slidably received, and said means is comprised of a helical spring about said shaft between said abutment and a sidewall of said chamber.

3. The balloon control ring defined in claim 1 wherein an extension of the longitudinal axis of said shaft passes through the geometric center of said confining member.

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