Sept. 11, 1956 J. NOGUERA 2,762,083

TOP ROLLERS FOR SPINNING AND PREPARATORY MACHINERY

Filed April 13, 1954

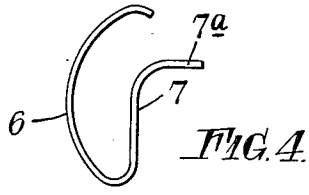


FIG. 4.

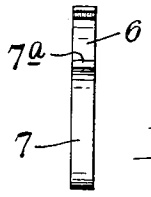


FIG. 5.

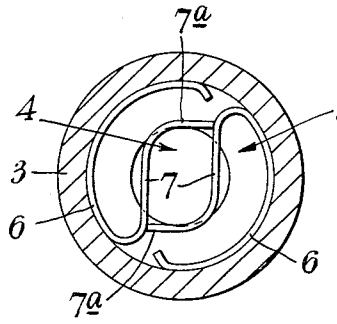


FIG. 1.

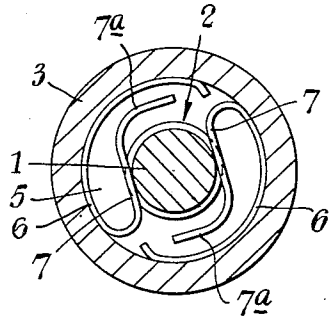


FIG. 2.

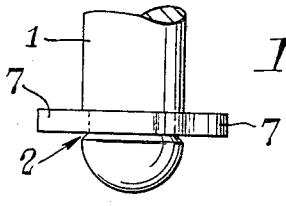


FIG. 3.

United States Patent Office 2,762,083 Patented Sept. 11, 1956

2,762,083

TOP ROLLERS FOR SPINNING AND PREPARATORY MACHINERY

Joseph Noguera, Manchester, England, assignor to Casablancas High Draft Company Limited, Manchester, England, a British company

Application April 13, 1954, Serial No. 422,959

Claims priority, application Great Britain May 21, 1953

1 Claim. (Cl. 19—142)

This invention relates to top rollers for spinning and preparatory machinery, the rollers being of the kind having a spindle or arbor which carries a roller boss at or near each end.

To permit partial or complete dismantling of such rollers as normal maintenance operation, it has been proposed to make one or preferably both said bosses detachable from the arbor. To this end a detachable boss is conveniently provided with an axial bore, dimensioned to engage over the arbor as a loose working fit, and with internal spring means having arms which spring into a locating groove in the arbor, when the boss is correctly positioned thereon, so as to grip the arbor and resist withdrawal of the boss.

For various reasons it has, however, proved extremely difficult to produce a spring means which will satisfactorily locate the boss on the arbor whilst at the same time ensuring that the boss can readily be withdrawn from the arbor, or operatively re-engaged thereon, when necessary. One such production difficulty arises from the fact that the spring means cannot readily be constructed with the necessary accuracy since it has to be hardened and the hardening process inevitably produces some distortion. In addition, the spring means has to be made in such a way that its free size is larger than the recess in the boss in which it is received, so as to ensure that the spring means will be gripped within the recess, and for this reason the completed spring means has to be additionally distorted by compression for the purpose of inserting it into the boss recess. This additional distortion, together with that caused by hardening, makes it virtually impossible to ensure uniformity in the shape of the spring means and consequently in the action of the spring on the arbor. A further production difficulty arises from the fact that arms on the spring means, designed to grip the arbor on either side of the latter, have to be spaced conveniently to receive the arbor end therebetween when it is inserted into the roller boss. Spring arms which will correctly space themselves cannot, however, readily be achieved in view of the aforementioned constructional difficulties and, owing to the very limited space available within the boss recess, it is also difficult to produce a suitable spacing member which will ensure that the spring arms are held in the correct mutual position.

A main object of the present invention is to overcome the foregoing difficulties and accordingly there is provided, for a top roller of the kind specified having a detachable roller boss axially bored to receive a central arbor, resilient coupling means composed of two separate spring members each having an outer and inner arm, said outer arms being shaped to press outwardly in opposite directions against an enlarged concentric seating within the boss, whilst said inner arms form chords across the boss bore between which the arbor can be gripped, said inner arms being initially spaced by mutual abutment to permit insertion of the arbor therebetween.

According to a more limited aspect of the invention there is provided, in a top roller for textile machinery having a central arbor and an axially bored roller boss adapted for engagement over a peripherally grooved end of said arbor, resilient coupling means constituted by two separate spring members having outer arcuate arms arranged to seat, in opposed relationship under compression, within an enlarged concentric seating in the boss and inner substantially co-planar arms arranged to form chords across said boss bore which can seat in the arbor groove and grip the arbor therebetween, said inner arms being initially spaced by mutual abutment to permit insertion of the arbor end.

In order that the invention may be clearly understood and readily carried into effect one embodiment thereof will now be described in detail with reference to the accompanying drawings in which:

Figure 1 is a part-sectional end elevation of a detachable boss containing coupling means according to the invention,

Figure 2 is a view similar to Figure 1 showing the boss operatively positioned on an arbor end,

Figure 3 is a plan view showing an arbor end engaged by the coupling means shown in Figures 1 and 2,

Figure 4 is a detail view showing one spring member of the pair which constitutes the coupling means and,

Figure 5 is a side elevation of Figure 4.

Referring now to the drawings, a top roller for a spinning or preparatory machine has a central arbor **1** in the form of an elongated rod member of circular cross-section. Formed around the rod member **1**, slightly inset from one end, is an annular groove **2** intended to co-operate with resilient coupling means located within a detachable roller boss **3** which fits over the grooved arbor end. For this purpose the boss **3** is provided with an axial bore **4** therethrough which is dimensioned to receive the grooved arbor end as a loose working fit.

At or near the outer end of the boss **3**, the bore **4** therethrough is enlarged to provide a concentric seating recess **5** in which the coupling means is seated. This coupling means consists of two separate substantially identical spring members each of which has an arcuate or semi-circular outer arm **6** formed on a slightly larger radius than the seating recess **5** within the boss. Each of the aforesaid semi-circular spring arms **6** is extended and returned inwardly at one end to provide an inner substantially co-planar arm **7** which has an approximately straight part contiguous with the outer arm and an extremity **7a** which is bent over away from the outer arm.

The two spring members as described are intended to seat as shown in Figures 1 and 2 in diametrically opposed positions in the boss recess **5**, the outer spring arms **6** being necessarily under slight compression when positioned in the recess. These arms **6** thus press outwardly in opposed directions against the boss seating. The spring members are entered in the boss seating **5** in relatively reverse positions so that the inner spring arms **7** extend across the bore **4** through the boss from diametrically opposed points, the inner spring arms **7** thus forming cords across the circular section of the boss bore **4**. The extremities **7a** of the inner spring arms are dimensioned so that each will bear on the inner arm of the other spring member in a manner such that both inner arms **7** will be spaced apart by mutual abutment in approximately parallel relationship and under slight tension.

The mouth of the spring seating recess **5** in the end of the roller boss **5** may be closed by an annular sealing washer or by a cap and end pivot or in any other convenient manner, the closure employed, or part thereof, serving to retain the springs in their correct seating position in the recess.

Whilst an arbor having a detachable boss at one end has been described it will be appreciated that the opposite arbor end will also be provided with a boss which may also be detachably retained in position on the arbor by coupling means in accordance with the invention. Alternatively the second boss could be a fixture on the arbor or may be detachably secured thereon in any other known manner.

For purposes of assembly, a grooved arbor end is inserted through the inner end of a roller boss bore 4 and the boss is moved axially along the arbor until the annular groove 2 near the end thereof is opposite the inner spring arms 7. In this position of the boss on the arbor, the inner spring arms will snap into the groove and the boss will thereby be firmly retained in position on the arbor. To obtain this snapping action of the spring arms 7 it will be appreciated that these arms are forced slightly apart by the entry of the arbor end therebetween, so that the extremity 7*a* on each arm moves out of abutment with the other said arm. The normal spacing of the arms, furthermore, with the extremities 7*a* in their abutting positions, is less than the diameter of the groove base in the arbor end so that the arms 7 when located in the groove will be under increased tension. In order to remove the boss 3 from the arbor, all that is necessary is to give the boss a sharp axial pull in relation to the arbor whereupon the inner spring arms 7 will move apart out of the arbor groove and permit the boss to be freely withdrawn. No difficulty will be experienced in positioning the boss on the arbor since the inner spring arms will always be mutually spaced by an amount sufficient to permit the arbor end to be pushed therebetween.

The inner end of the detachable boss 3 will normally be positively located on the arbor in known manner against one end of an intermediate bearing sleeve which surrounds the arbor. The opposite end of this sleeve will similarly bear against the boss at the opposite arbor end which, as aforesaid, may be detachably mounted as described in the foregoing or in any other convenient manner, or may be a fixture on the arbor.

I claim:

In a top drafting roller for a textile machine the combination of an axially bored roller boss having an enlarged internal annular seating around one end of said bore, two diametrically opposed spring members each having an outer arcuate arm engaging under compression in said seating and an inner arm which forms a chord across said boss bore and is held slightly flexed by the abutment of an inturned inner arm end against the other said inner arm and an arbor having a peripherally grooved end adapted to enter into an operative position in said boss bore in which said inner spring arms are located in said arbor groove under slightly increased flexure whereby arbor and boss are resiliently held against relative axial and rotational movement.

References Cited in the file of this patent

UNITED STATES PATENTS

327,691	Jackson	Oct. 6, 1885
861,912	Stiles	July 30, 1907
1,841,630	Reiter	Jan. 19, 1932