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J. T. MEATS & G. E. CHANDLER.

ROTARY RING SPINNING OR TWISTING APPARATUS.

APPLICATION FILED JULY 5, 1906.

Fig. 1.

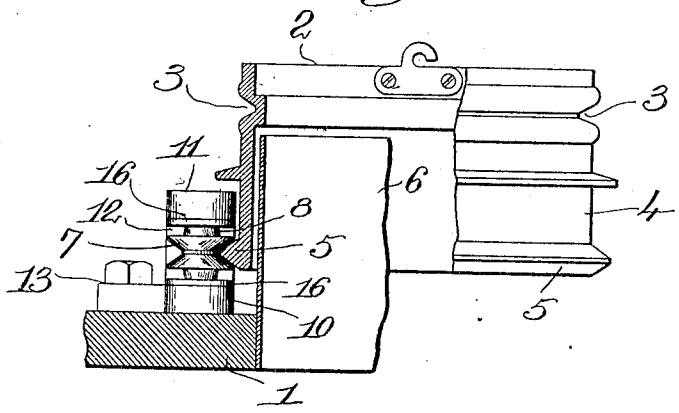


Fig. 2.

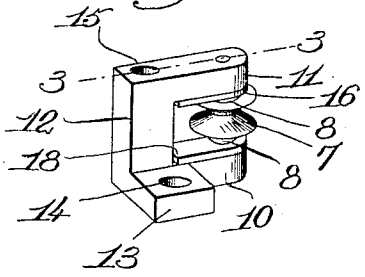


Fig. 3.

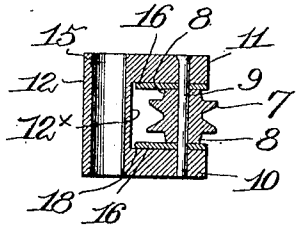


Fig. 4.

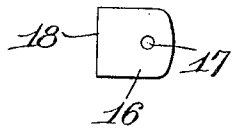


Fig. 5.

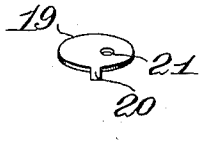
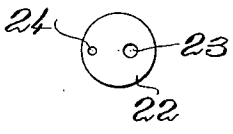


Fig. 6.



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ROTARY-RING SPINNING OR TWISTING APPARATUS.

No. 857,088. Specification of Letters Patent. Patented June 18, 1907.

Application filed July 5, 1906. Serial No. 324,759.

To all whom it may concern:

Be it known that we, JOHN T. MEATS and GEORGE E. CHANDLER, citizens of the United States, and residents of Taunton, county of Bristol, State of Massachusetts, have invented an Improvement in Rotary-Ring Spinning or Twisting Apparatus, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention relates to that type of apparatus for spinning or twisting fibrous material wherein a rotating ring is employed, the thread or yarn leading through a suitable guide on the ring to the spindle, or bobbin thereon, the ring being positively rotated and causing the rotation of the spindle by or through the pull of the yarn.

An apparatus of this general type is shown in United States patent to Atherton No. 759846 dated May 17, 1904, to which reference may be had, the ring having a depending sleeve-like portion provided with an external track or flange which co-operates with anti-friction rolls, the latter supporting the ring axially and laterally.

Our present invention has for its particular object the production of novel, simple and effective means for supporting the ring, so constructed and arranged that the severe end-thrust of the rolls can be resisted and properly cared for.

The novel features of our invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a view partly in section and partly in elevation of a sufficient portion of a spinning or twisting apparatus of the type referred to, with one embodiment of our invention applied thereto; Fig. 2 is a perspective view of one of our novel ring-supporting devices; Fig. 3 is a vertical section thereof on the line 3—3, Fig. 2; Fig. 4 is a plan view of one of the bearings or bearing-washers for the roll; Fig. 5 is a perspective view of another form of bearing washer, and Fig. 6 is a plan view of yet another form of washer, to be referred to.

Referring to Fig. 1 the ring-rail 1, rotatable ring 2 having a groove 3 for the usual driving-band (not shown) and a depending sleeve-like extension 4 having an external track or flange 5, and the upright sleeves 6 secured to the ring-rail surrounding the spindle opening therein, may be and are all substantially of well known construction and operate in usual manner.

In practice each ring is supported axially and laterally by a series of rolls, three or more, mounted in suitable brackets on the ring-rail and co-operating peripherally with the track or flange of the ring. In practice it has been found very difficult to secure a bearing which will take up and resist the end-thrust of the rolls, the wear being great at each end of the rolls, owing to the action of the band pull. In our present invention we have overcome this practical difficulty in a very simple and economical manner, the bearings made in accordance with our invention being long-lived and readily renewable when necessary.

Referring to Figs. 2 and 3 we have shown the grooved anti-friction supporting roll 7, having bearing hubs 8 at its upper and lower ends, said roll being rotatably mounted on a vertical pivot-pin 9 which is fixedly held at its ends in the projecting foot 10 and overhanging head 11 of a substantially □-shaped bracket 12. The bracket has a lateral extension 13 at its base provided with a hole 14, for an attaching screw to secure it to the ring-rail, and a hole 15 is made in the body portion of the bracket for a similar purpose. The general structure of the bracket is not novel, *per se*, except that the pivot-pin is fitted with a driving fit in the head and foot of the bracket, as herein shown. In order to form wear-resisting bearings, for and to take up the end-thrust of the roll we interpose flat bearing washers 16, made of hardened steel, between the ends 8 of the roll and the adjacent parts 10 and 11 of the bracket. These washers can be stamped out of steel plate in a very rapid and cheap manner, and are of such thickness as will properly fill the spaces at the ends of the roll, the washers resting against the flat faces of the head and foot of the bracket, as shown. A hole 17 is made in each washer for the passage of the pivot-pin therethrough, see Fig. 4.

In order to prevent the bearing washers from turning or revolving with the roll we prefer to make the same with a straight inner end 18, Fig. 4, which lies adjacent the upright face $12^{\times}$ of the bracket, as shown, so that any tendency of the washer to revolve on the pin 9 is prevented by engagement of the said straight edge of the washer with the bracket face $12^{\times}$. The hardened washers efficiently take up the end thrust of the roll and resist wear for a long time, and when finally worn so as to require renewal the pivot-pin is driven out, the worn washer or washers removed and new ones inserted, after which the pin is again driven into place. We find that with such end-thrust bearings the wear is so slight and so gradual that no adjusting devices are necessary, hence the construction is greatly simplified and its cost reduced.

Instead of making the bearing washer with a straight edge, as shown in Fig. 4, the washer can be made as a circular disk 19, Fig. 5, with a depending projection or lug 20 which will bear against the side of the head or foot of the bracket, to restrain the washer from rotation, the pivot-pin passing through the hole 21.

Yet another arrangement is shown in Fig. 6, the disk-like washer 22 has a hole 23 for the pivot-pin, and a second hole 24. By making a corresponding hole in the adjacent part of the bracket a holding pin can be inserted through the hole 24 of the washer, to prevent the same from turning.

Any of the several forms of bearing-washer herein illustrated may be employed, but owing to its simplicity we prefer the form illustrated clearly in Figs. 2, 3 and 4, as it is thoroughly efficient and the cheapest.

Our invention is not restricted to the precise construction and arrangement herein shown and described, nor to the particular shape of the supporting roll, and modifications can be made in various particulars by those skilled in the art without departing from the spirit and scope of our invention.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In apparatus for spinning or twisting fibrous material, the combination, with a rotatable ring, and a ring-rail of ring-supports mounted on the rail and each provided with a roll rotating on a fixed vertical axis, detachable, plate-like hardened end-thrust bearings for each roll arranged in parallelism, the peripheral portions of the rolls co-operating with the ring and sustaining the same axially and laterally, and means to prevent rotative movement of the bearings on the supports.

2. In apparatus for spinning or twisting fibrous material, the combination, with a rotatable ring, and a ring-rail, of supports mounted on the rail and each provided with a vertical pin, a grooved roll rotatably mounted on the pin, detachable, flat faced and hardened end-thrust bearings for the ends of each roll, the pin extending through the bearings, and means to restrain the bearings from rotative movement, the rolls co-operating with the periphery of the ring and sustaining the same axially and laterally.

3. In apparatus for spinning or twisting fibrous material, the combination, with a rotatable ring, and a ring-rail, of substantially ⊏-shaped supports mounted on the ring-rail, a fixed, vertical pin held in each support, a roll rotatably mounted on the pin, and hardened non-rotatable bearing washers interposed between the upper and lower ends of the roll and the adjacent flat portions of the support and resting upon such flat portions, the pin passing through the washers.

4. In apparatus for spinning or twisting fibrous material, the combination, with a rotatable ring, and a ring-rail, of supports mounted on the rail and each having a vertical pin fixed therein, a grooved anti-friction roll rotatably mounted on the pin and adapted to co-operate with the peripheral portion of the ring, flat, hardened end-thrust bearings for the roll, laterally positioned by the pin, and means to prevent rotative movement of the bearings on the supports.

5. In ring-spinning or twisting apparatus, a rotatable ring, a ring-rail, ring-supporting brackets mounted on the rail, each bracket having a projecting foot and an overhanging head, a fixed vertical pin connecting the head and foot, a ring-sustaining roll rotatably mounted on each pin, hardened flat bearing-washers interposed between the ends of the roll and the head and foot of the bracket, to take up end-thrust of the roll, and means to prevent rotation of the washers, the pivot pin passing through the latter.

6. A grooved ring-supporting roll having bearing hubs at its ends, a bracket having a foot and an overhanging head, a vertical pivot-pin fixed in the head and foot and on which the roll is rotatable, flat, hardened bearings removably interposed between the hubs of the roll and the head and foot, respectively, of the bracket, the pivot-pin passing through said bearings, and means to restrain the latter from rotation.

7. A substantially ⊏-shaped bracket, a vertical pivot pin fixed in the head and foot thereof, a grooved roll rotatably mounted on the pin, removable hardened end-thrust bearings interposed between the ends of the roll and the head and foot of the bracket, and held from lateral displacement on the flat face of the head and foot by the pivot pin, and means to restrain said bearings from rotation.

8. A grooved ring-supporting roll, a vertical pivot-pin on which the roll is rotatably

mounted, a bracket in which the ends of said pin are fixed, and non-rotative, hardened washers, interposed between the ends of the roll and the adjacent flat portions of the bracket and resting upon the flat portions thereof, to form end-thrust bearings for the roll.

In testimony whereof, we have signed our names to this specification, in the presence of two subscribing witnesses.

JOHN T. MEATS.
GEORGE E. CHANDLER.

Witnesses:
JAMES C. BROWN,
EDWARD G. HALL.