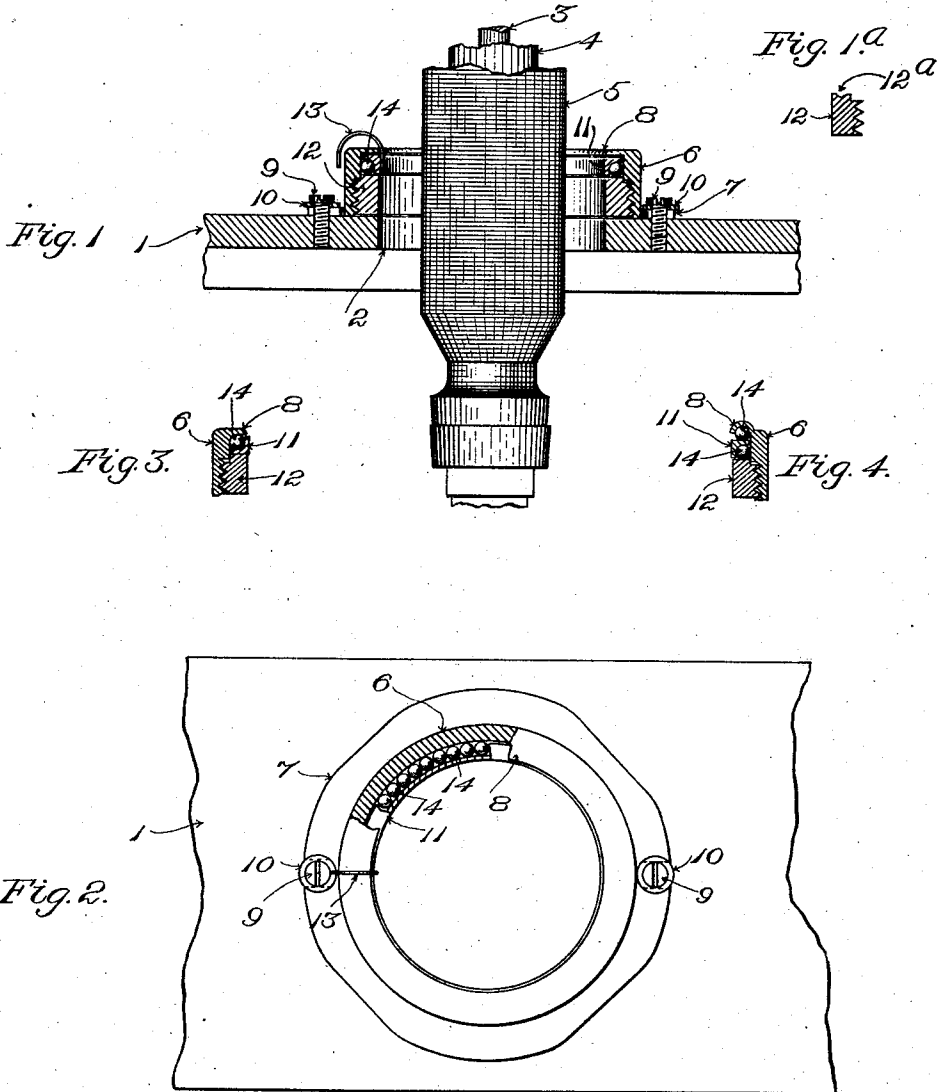


A. J. THOMSON.
SPINNING RING.
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1,009,602.

Patented Nov. 21, 1911.



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UNITED STATES PATENT OFFICE.

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SPINNING-RING.

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To all whom it may concern:

Be it known that I, ALFRED J. THOMSON, a citizen of the United States, residing at Canton, in the county of Norfolk, State of Massachusetts, have invented a certain new and useful Improvement in Spinning-Rings, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention has relation to the rings and travelers which are employed in ring-spinning machines, and consists in an improved construction of ring and traveler furnished with ball-bearings for the traveler. The said construction, in addition to including a series of anti-friction balls constituting a bearing for the traveler, is characterized by the ring and traveler being provided with relatively broad contact surfaces which, when in contact with each other, coact to produce a drag upon the traveler and yarn. The said drag may be utilized either to restrain the tendency of the yarn to balloon during the rotation of the spindle at high speed, or to prevent slackening of the yarn, and consequent kinking of the latter, in slowing down and stopping the rotation of the spindle.

Embodiments of the invention are shown in the drawings, in which latter,—

Figure 1 shows in vertical section a portion of the ring-rail of a ring-spinning frame, and a ring and traveler embodying one form of the invention, and in elevation shows portions of a spindle and bobbin, with a load of yarn upon the said bobbin. Fig. 1^a is a sectional detail. Fig. 2 is a plan view of the parts of Fig. 1, certain portions being represented as broken away so as to show features of internal construction, and the spindle, bobbin, and yarn-load of Fig. 1 being omitted. Fig. 3 is a sectional view of a ring and traveler embodying a modification.

Having reference to the drawings,—at 1 is shown a portion of the ring-rail of a ring-spinning frame, it having an opening therethrough at 2, Fig. 1, and at 3, Fig. 1, is a spinning-spindle extending up through the said opening, 4 being a bobbin that is mounted upon the said spindle, and 5 being a partly-completed yarn-load that has been wound upon the said bobbin.

The ring which is shown applied to the ring-rail in Figs. 1 and 2 comprises, essen-

tially, the cylindrical upright shell or body-portion 6, the outwardly-projecting supporting or base-flange 7 which rests upon the upper surface of the ring-rail, and the inwardly-projecting retaining-flange or rim 8 at the top of the said shell 6. The supporting or base-flange 7 is slotted at two opposite points for the reception of the stems of the headed securing screws 9, 9, to which are fitted the washers 10, 10, resting upon the top surface of the flange 7. The stems of the said securing screws enter screw-threaded holes which are tapped in the ring-rail, as usual. By means of the said screws and washers the ring is secured in position upon the ring-rail.

The traveler which is shown applied to the ring in Figs. 1 and 2 consists, essentially, of an annulus 11 provided with a thread-guide 13. The said annulus fits within the cylindrical shell 6 closely adjacent the inwardly-projecting flange 8, and is confined in place vertically by means of a track-ring 12. The thread-guide 13 in this instance is arched and extends upward from the traveler-annulus and outward over the top of the ring. Track-ring 12 is screwed into place within the shell 6 from below, it being exteriorly screw-threaded and an internal thread being cut into the inner surface of the said shell.

At 14, 14, etc., are a series of anti-friction balls constituting a vertical bearing for the traveler. In addition, they constitute a lateral bearing for the traveler, restraining it against tendency to move diametrically or laterally under strain transmitted by the yarn or otherwise applied or created. The annulus constituting the body of the traveler is formed with a horizontal flange and a vertical one. Contact takes place vertically between the balls and the horizontal flange, and horizontally between the balls and the vertical flange. In the drawings the horizontal flange extends outward at the exterior of the traveler, and the vertical flange is located at the inside of the series of balls, although the invention is not restricted in these respects. In Figs. 1 and 2 the horizontal flange is above the balls and normally rests thereon. In the case of this construction and arrangement, the upwardly-acting component of the strains that are transmitted to the traveler by means of the

yarn tends to raise the traveler, especially in starting-up, so that its weight is more or less completely lifted from the balls. The extent of the lifting is limited through the contact of the horizontal flange of the traveler with the underside of the inwardly extending flange 8 of the ring. The contacting surfaces of the said flanges are comparatively broad, so as to give a fairly wide and efficient contact, securing a reliable and effective action, without any tendency to wear grooves in either of such surfaces. More or less freedom to move vertically may be conferred upon the traveler by adjusting the track-ring 12 downward or upward. In spinning at high speed the traveler will lift until its comparatively broad contact surface touches that of the ring. This touching of the two surfaces will create a drag upon the traveler and yarn, such drag tending to restrain the yarn. Thereby the ballooning of the yarn in spinning at high speed will be controlled and reduced. The drag upon the traveler which is due to the touching or contact of the comparatively broad surfaces of the traveler and ring may be increased for the coarser counts of yarn by adjusting the track-ring upward so that the top flange of the traveler shall be confined more closely against the said inwardly-extending retaining flange 8 of the ring. Such drag may be reduced for fine counts by adjusting the track-ring downward so as to leave more room for vertical play of the traveler beneath the said retaining-flange.

In Fig. 3 the traveler is inverted, the outwardly-projecting flange thereof being below and the vertical flange extending upward. The balls 14, 14, 14, etc., are above the said outwardly-projecting flange, which rests upon the track-ring 12. In this case, the drag resulting from the touching or contact of the two comparatively broad contact surfaces of the traveler and ring is heavier than in Figs. 1 and 2. Such drag may be varied to meet requirements by increasing or decreasing the number of balls which rest upon the outwardly-projecting flange of the traveler, thereby increasing or decreasing the weight which presses the traveler into contact with the track-ring, and consequently the degree of frictional resistance to the turning of the traveler. The yarn in lifting the traveler lifts the balls also. The limit of the lifting action is fixed by the engagement of the balls with the under side of the inwardly-projecting retaining flange of the ring, the balls serving to regulate and diminish the frictional resistance to the turning of the traveler by the said engagement and by the engagement of the balls with the vertical inner surface of the cylindrical shell of the ring. In this embodiment of the invention the ball-bearings constituting a vertical bearing for the

traveler are located above the traveler, and take the pressure when the traveler is raised. In stopping, as the spindle slows down, the traveler settles down until its comparatively broad contact surface touches that of the track-ring 12, the drag due to such touching then operating to retard the movement of the traveler so that the yarn remains taut and is thereby prevented from kinking and snarling.

Fig. 4 shows an embodiment of the invention in which one series of balls is employed beneath the traveler and a second series above the latter, the latter series being confined in place within the arched top-portion of the ring. In this embodiment of the invention there is one vertical bearing below the traveler and another above the same.

The employment of the anti-friction balls in connection with the annular or ring-like traveler, constituting a vertical bearing and a diametrical bearing therefor, renders the drag on the traveler more uniform, enables a larger, stronger, and more durable traveler to be employed, and reduces the rate of wear of the traveler. Such embodiment, especially when coupled with means of adjustment substantially as described, enables a traveler of given weight to be employed for a considerable range of counts or sizes of yarns. The tendency of the yarn to balloon during the operation of the machine can be more perfectly controlled by the use of my invention. In case the yarn balloons too freely, the track-ring may be turned up somewhat, to thereby reduce the ballooning.

The ring-proper may conveniently be produced from sheet-steel, stamped into shape. The top of the track-ring 12 may be grooved as at 12^a, Fig. 1^a, to form a track or race for the balls.

What is claimed as the invention is:—

1. In combination, a ring-shaped support, an annular traveler rotated by the pull of the yarn, and a series of anti-friction balls constituting a bearing for said traveler, said traveler capable of movement vertically under the action of the yarn, the traveler and support having comparatively broad contact-surfaces which come together to limit the extent of the vertical movement and coact in producing a drag upon the rotation of the traveler.

2. In combination, a ring-shaped support, an annular traveler rotated by the pull of the yarn, a series of anti-friction balls constituting a bearing for said traveler, said traveler capable of movement vertically under the action of the yarn, and means for adjusting the extent of the vertical movement, the traveler and support having comparatively broad contact-surfaces which come together to limit the extent of the vertical movement and coact in producing a drag upon the rotation of the traveler.

3. In combination, a ring-shaped support having a comparatively broad contact-surface, an annular traveler rotated by the pull of the yarn and having a horizontal flange
5 provided with a comparatively broad contact-surface which coacts with that of the support in creating a drag on the traveler, and a series of anti-friction balls serving as a vertical bearing and diametrical bear-

ing for said traveler, the traveler having 10 capacity for vertical movement.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED J. THOMSON.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
