Sept. 1, 1931. J. V. MANN 1,821,656

BOBBIN HOLDER FOR CREELS OF SPINNING FRAMES AND THE LIKE

Filed May 20, 1930

Fig. 1.

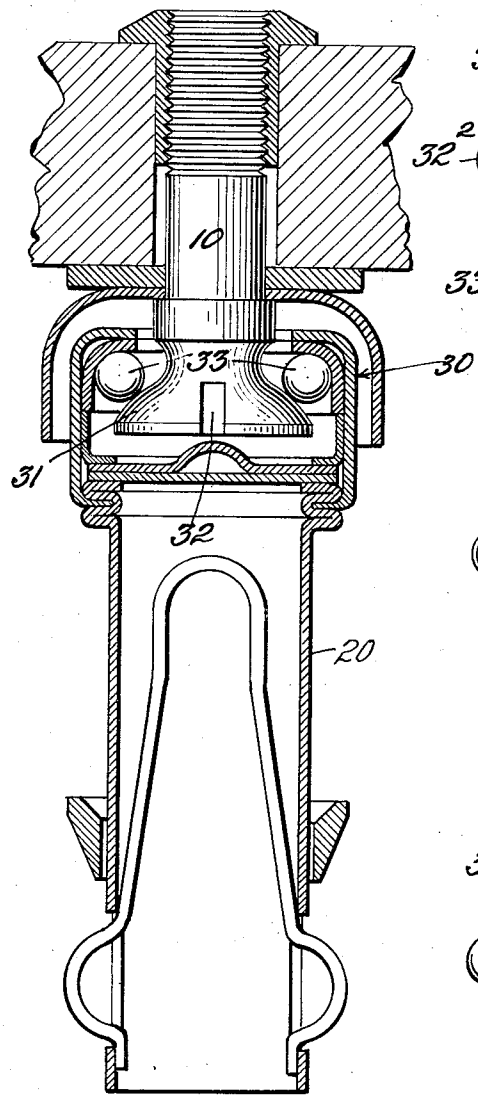


Fig. 2.

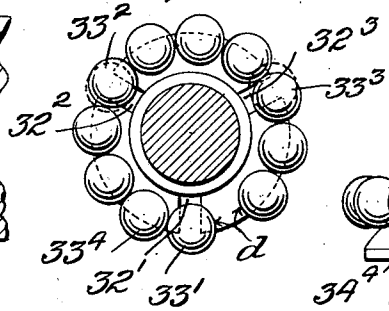


Fig. 3.

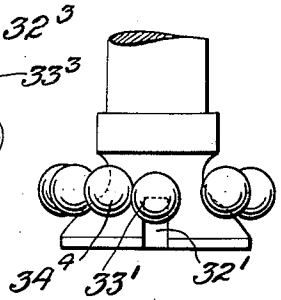


Fig. 4.

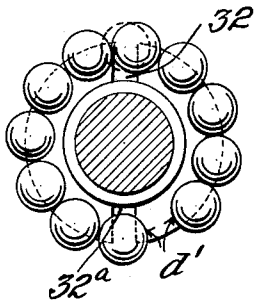


Fig. 5.

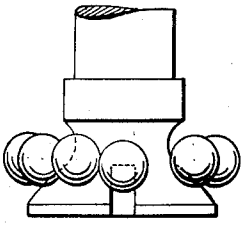


Fig. 6.

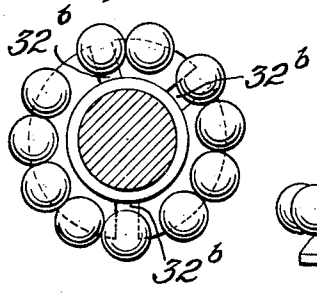
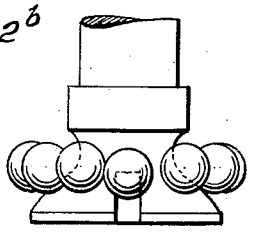


Fig. 7.



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Patented Sept. 1, 1931 1,821,656

UNITED STATES PATENT OFFICE

JOHN V. MANN, OF ELMIRA, NEW YORK, ASSIGNOR TO ECLIPSE TEXTILE DEVICES, INC., OF ELMIRA, NEW YORK, A CORPORATION OF NEW YORK

BOBBIN HOLDER FOR CREELS OF SPINNING FRAMES AND THE LIKE

Application filed May 20, 1930. Serial No. 453,900.

This invention relates to bobbin holders for the creels of spinning frames and the like.

During the operation of a spinning frame, it is desirable that the frictional resistance to the rotation of the bobbins on the creel be made very slight in order to avoid an undesired back draft on the rovings. I have found, however, that, if the frictional resistance is made entirely negligible, difficulties are experienced when the spinning frame is stopped or when it is operated irregularly. Under these circumstances, the bobbins continue to rotate under their own momentum more rapidly than the rovings are drawn from them. This results in a slacking of the rovings between the bobbins and the drawing rolls, which is likely to cause snarling or breaking of the rovings or a balling up of the rovings in the drawing rolls.

In accordance with my invention, these disadvantages are eliminated, while the advantages heretofore attained by reducing the bobbin friction by means of ball bearings are retained.

In accordance with my invention, means are provided to cause a slight frictional drag on a ball bearing connecting the stationary and rotary parts of a bobbin holder. The frictional drag is so slight that it does not cause appreciable back draft during the spinning operation, but it is, on the other hand, sufficient to prevent over-running of the bobbins when the frame is stopped or operated irregularly. An important feature of the invention consists in providing drag means which produce a uniform drag during the rotation of the bobbin, so that such slight back draft as is caused by the drag means does not cause irregularity in the count of the yarn spun from the roving drawn from the bobbin.

A bobbin holder embodying the invention and provided with the drag means which I have found most satisfactory in practice is illustrated in the accompanying drawings in which:

Fig. 1 is an axial section of the bobbin support;

Figs. 2 and 3 are respectively a fragmentary plan view and a fragmentary elevation showing the bearing balls and one of the races of the ball bearing of the bobbin support; and

Figs. 4 and 5, and 6 and 7 are views similar to Figs. 2 and 3 showing modifications.

The bobbin holder illustrated is of the type shown in Hasbrouck Patent No. 1,692,441, issued November 20, 1928, having a fixed supporting part 10 and a rotatable bobbin-engaging part 20 connected by a ball bearing 30, one of whose races 31 is spherically curved about a center located on the axis of the rotary part 20.

To provide a slight drag on the ball bearing, one or more slots 32 are provided in the lower ball race 31. Each slot 32 has a width materially less than the diameter of one of the bearing balls 33, so that a ball arriving over the slot drops slightly out of alignment with the other bearing balls, as shown in Fig. 3.

The bearing balls 33 are loose, that is do not completely fill the annular space between the races of the bearing, so that, when the balls are in contact with one another, a short space d is left between two of the balls. The clearance thus provided allows each ball to rotate freely as in an ordinary ball bearing except when one ball has dropped into one of the slots 32, as shown in Fig. 3. When this occurs, the balls are brought into contact with each other, as shown in Figs. 2 and 3, which causes a slight drag on their rotation until the ball which has fallen into the slot is pushed out of it.

To make this slight drag act substantially uniformly during the rotation of the bobbin carried by the part 20, the slots 32 are most desirably so arranged that one of the balls enters one of the slots at a number of uniform intervals during the rotation. This may be accomplished with the use of three slots, as shown in Figs. 2 and 3, by an equal distant spacing of the slots, coupled with the use of bearing balls whose diameters are so proportioned to the length of the annular space between the races that

the distance between each two successive slots is equal to an even multiple of the ball diameter plus one-third of the length of the clearance space *d*. The result, as clearly shown in Fig. 2, is that at regular intervals during the revolution, one ball will enter one of the slots. Thus, after the ball 33^1 has been pushed out of the slot 32^1, the ball 33^2 will enter the slot 32^2 when it reaches the position indicated in dotted lines, and, after this ball has left this slot, the ball 33^3 will enter the slot 32^3 when it reaches the position indicated in dotted lines. Then, after an equal interval, the ball 33^4 will enter the slot 32^1, etc. The slight drag caused by holding the balls in contact with one another will thus occur frequently at regular intervals during the rotation.

In the modification shown in Figs. 4 and 5, a similar result is secured at slightly less frequent intervals by means of two diametrically opposite slots 32*a*, separated by circumferential distances equal to an even multiple of ball diameters plus one-half the length of the clearance space *d'*.

When a greater drag is required because of the use of heavier yarn packages, it may be secured by the arrangement illustrated in Figs. 6 and 7 in which a plurality of slots 32*b* are so positioned that balls fall into each of them simultaneously.

What I claim is:

1. A bobbin support, comprising fixed and movable parts connected by a ball bearing, and drag means slightly increasing the normal frictional resistance of the ball bearing to prevent overrunning of a bobbin carried by the support when the draft on the roving is stopped.

2. A bobbin support, comprising a fixed part, a rotatable bobbin-engaging part, a ball bearing connecting said parts and containing loose balls, and drag means for retarding the movement of individual balls at regular intervals.

3. A bobbin support, comprising a fixed part, a rotatable bobbin-engaging part, a ball bearing connecting said parts and containing loose balls, and means for retarding a single one of the bearing balls at regular intervals.

4. A bobbin support, comprising a fixed part, a rotatable bobbin-engaging part, a ball bearing connecting said parts and containing loose balls, and drag means acting successively on individual bearing balls during the rotation of the bearing balls.

5. A bobbin support, comprising a fixed part provided with a ball race, a rotatable part provided with a ball race, a set of loose bearing balls between said races, and a depression in the lower race having a width materially less than the diameter of one of the balls.

6. A bobbin support, comprising a fixed part provided with a ball race, a rotatable part provided with a ball race, a set of bearing balls between said races leaving a clearance space between two of the balls when the balls are in contact with one another, the lower bearing race being provided with a plurality of depressions separated by equal circumferential distances, each of which is equal to an even multiple of the diameter of the balls, plus the length of the clearance space divided by the number of depressions.

7. A bobbin support, comprising a fixed part and a rotary part, bearing races formed on said parts respectively, the lower race having a convex surface and containing a depression, and a set of bearing balls fitting loosely between said races and each having a diameter materially greater than the width of said depression.

In testimony whereof I have hereunto set my hand.

JOHN V. MANN.