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BOBBIN SUPPORT

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Fig. 2

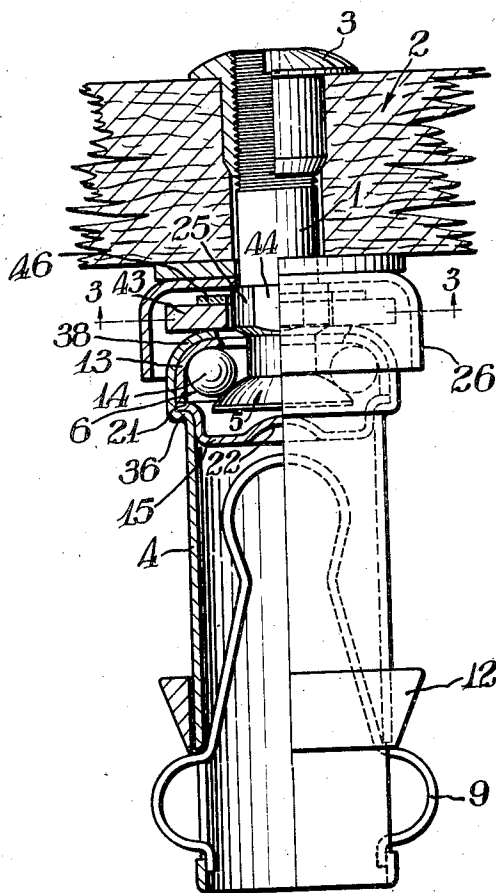


Fig. 1

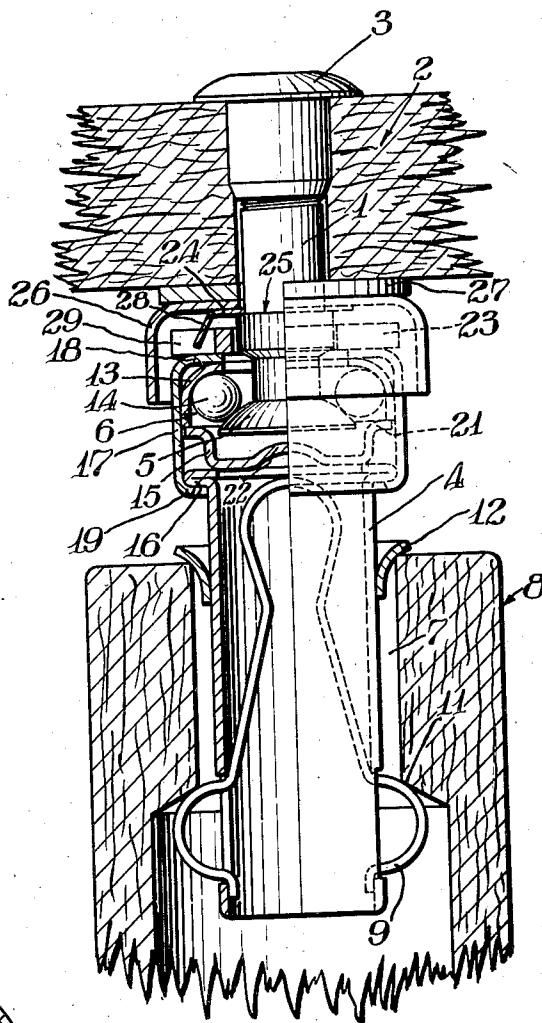
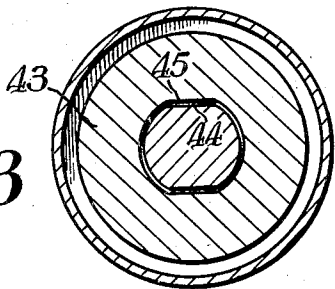


Fig. 3



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BOBBIN SUPPORT

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12 Claims. (Cl. 242—130)

The present invention relates to bobbin supports such as are used for holding roving bobbins on the creels of spinning frames and the like and more particularly to that type which incorporates an anti-friction bearing for supporting the bobbin pendulously from the underside of the creel board.

It is an object of the present invention to provide a novel bobbin holder which is efficient and reliable in operation and simple and economical in construction and assembly.

It is another object to provide such a device which embodies an improved and simplified bearing structure.

In some installations of anti-friction bobbin holders, it has been found desirable to introduce a slight constant frictional drag in the bearing in order to control overrun of the bobbin and place a controlled tension on the roving. It is a further object therefore of the present invention to provide such a device which incorporates means for introducing a predetermined constant drag or braking effect in the bearing.

It is another object to provide such a device in which the braking effect may be readily adjusted for any particular installation.

Further objects and advantages will be apparent to those skilled in this art from the following description taken in connection with the accompanying drawing in which:

Fig. 1 is a side view partly in section of one preferred embodiment of my invention;

Fig. 2 is a similar view of a second embodiment of my invention; and

Fig. 3 is a section taken substantially on the line 3—3 of Fig. 2.

Referring first to Fig. 1 of the drawing, there is illustrated a bobbin holder comprising a fixed supporting part in the form of a bolt 1 arranged to traverse an opening in a creel board 2 and to be retained therein by suitable means such as a nut 3.

A movable bobbin carrying part in the form of a hollow sleeve 4 is arranged to be supported from a bearing head 5 formed on the lower end of the fixed support 1 by means of an anti-friction bearing indicated generally at 6. The sleeve 4 is adapted to enter an opening 7 in a bobbin 8 and to be yieldingly retained therein by means of a spring detent member 9 which yieldingly engages a shoulder 11 in the interior of the bobbin 8. The bobbin is preferably maintained in alignment with the sleeve 4 by means of a conical centering member 12 slidably mount-

ed on the sleeve 4 and arranged to enter the upper end of the opening 7 in the bobbin.

In the present embodiment of the invention, the anti-friction bearing 6 comprises a bearing race 13 adapted to contain a plurality of ball bearings 14 and a ball retainer 15, which elements are maintained in assembled relation and clamped to a shoulder 16 on the end of the sleeve 4 by means of a thimble 17 having a flange 18 enclosing the ball race 13 and a flange 19 which is pressed down over the shoulder 16 in order to unify the parts.

The ball retainer 15 is formed with a flange 21 abutting the ball race 13 and partially filling the space between the ball race and the bearing head 5 of the bolt 1 in order to retain the balls 14 in position, and is provided with a central portion which is struck up to form a rounded thrust bearing 22 for the bearing head 5. The bearing surface of the head 5 is preferably formed as a zone of a sphere, the center of which is on the axis of the sleeve 4 in order that the sleeve may have universal motion with respect to the fixed member 1.

According to the present invention, a frictional drag is applied to the bearing 6 which, as here shown, is provided by a disc shaped weight member 23 non-rotatably connected to the fixed member 1, and frictionally bearing on the flange 18 of the thimble 17. The friction member 23 is connected to the fixed member 1 by means of a washer 24 clamped between a shoulder 25 on the fixed member 1 and a dust cap 26 which in turn bears on a large washer 27 on the underside of the creel board 2. The washer 24 is provided with a tongue 28 extending into a slot 29 in the friction member 23 whereby relation of the friction member is prevented without interfering with vertical movement thereof such as might be caused by a tilting movement of the movable sleeve 4.

It will be understood that the friction member 23 is selected so as to have sufficient weight to produce the desired amount of friction for the particular installation. It has been found in some installations that improved results may be obtained by introducing a greater frictional drag than is produced by the largest member that can be conveniently used in a bearing of standard construction. In such cases it has been found that this form of weight member lends itself readily to the use of a steel disc which is permanently magnetized, and since the thimble 17 is of magnetizable material, sufficient frictional drag to satisfactorily take care of all types of

installations may be obtained by magnetization of the friction member 23, which, by reason of the slot 29, forms in effect a horseshoe magnet. The anchoring washer 24 is preferably formed of non-magnetic material in order to prevent the possibility of a magnetized friction member 23 sticking up against the dust cap 26 when raised by the tilting of the bobbin holder.

In the operation of the device, the bobbins 8 are removed from the bobbin holder by drawing them off against the resistance of the detent spring 9, and replaced thereon by simply pressing them back on, the centering element 12 automatically performing its function. It will be understood that when the bobbin is being replaced the thrust bearing 2 on the ball retainer 15 engages the bottom of the bearing head 5 to limit the upward movement of the sleeve 4.

The frictional element 23 is so selected, and magnetized if necessary, to produce such a constant rotational drag so as to prevent overrun of the bobbin when the machine is stopped or by reason of irregular performance of the machine, and to maintain the desired amount of tension on the roving. It will be readily understood that the amount of drag desirable for each installation, when once determined, can always be obtained by the use of similar friction elements, and this drag remains substantially constant during long periods of operation since the drag is so slight that wearing of the parts is negligible.

In the embodiment of the invention illustrated in Fig. 2, the movable sleeve member 4 is expanded at its upper end to provide a shoulder 36, and the anti-friction bearing 6 is mounted in the expanded end of the sleeve. As here shown, the ball retainer and thrust member 15 is mounted in the sleeve 4 with its peripheral flange 21 seated on the shoulder 36. The ball race 13 with balls 14 and bearing head 5 are then inserted in the expanded end of the sleeve which is then crimped over as shown at 38 to clamp the parts together.

In this embodiment of the invention, a friction element 43 is provided which is non-rotatably but slidably connected to the fixed support 1, as illustrated in Fig. 3, by forming flats 44 on opposite sides of the shoulder 25 on the support 1, and forming the opening 45 in the friction element 43 as a double D section to conform therewith. The friction element 43 is thus permitted to bear on the constricted end 38 of the sleeve 4 and apply a frictional drag thereto in accordance with the weight of the friction element. The friction element 43 may be magnetized to increase the retarding effect if so desired, and in such case the member may be slotted to form adjacent poles, although this is not necessary for efficient operation. When a magnetized friction element 43 is used, a non-magnetic washer such as indicated at 46 is preferably used to space the element 43 from the dust cap 26 to prevent the possibility of said element adhering to the dust cap.

The operation of this embodiment of the invention is in general the same as the embodiment previously described, the main points of difference being the integral construction of the clamping means for the bearing, and the formation of the frictional retarding element with a direct splined connection to the fixed support 1.

Although certain embodiments of the invention have been shown and described in detail, it will be understood that other embodiments are possible and various changes may be made in the details and arrangements of the parts without

departing from the spirit of the invention as defined by the claims appended hereto.

What is claimed is:

1. In a bobbin support a fixed part, a movable bobbin carrying part, an anti-friction bearing connecting said parts, and a brake element non-rotatably connected to the fixed part with freedom for vertical movement and bearing frictionally on the end of the movable part to produce a predetermined resistance to rotation thereof.

2. In a bobbin support a fixed part, a movable bobbin carrying part pendulously supported thereby, an anti-friction bearing connecting said parts, and a brake element non-rotatably connected to the fixed part with freedom for vertical movement and bearing frictionally on the end of the movable part to produce a predetermined resistance to rotation thereof.

3. In a bobbin support a fixed part, a movable bobbin carrying part of magnetic material, an anti-friction bearing connecting said parts, and a magnetic member non-rotatably connected to the fixed part and cooperating with the movable part to impede its rotation.

4. In a bobbin support a fixed part, a movable bobbin carrying part of magnetizable material pendulously supported thereby, an anti-friction bearing connecting said parts, and a magnetized brake element non-rotatably connected to the fixed part with freedom for vertical movement and bearing frictionally on the movable part to produce a predetermined resistance to the rotation thereof.

5. In a bobbin support a fixed part, a movable bobbin carrying part of magnetizable material supported thereby, and a magnetized brake element splined to the fixed part and bearing frictionally on the moving part.

6. In a bobbin support a fixed part, a movable bobbin carrying part of magnetizable material supported thereby, a magnetized brake element splined to the fixed part and bearing frictionally on the moving part, a dust cap arranged to protect the joint between the bobbin support and the fixed part, and means to prevent the brake element from adhering to the dust cap.

7. In a bobbin support a fixed part, a movable bobbin carrying part of magnetizable material supported thereby, a magnetized brake element splined to the fixed part and bearing frictionally on the moving part, a dust cap arranged to enclose the brake element and the portion of the bobbin holder in frictional engagement therewith, and non-magnetic spacing means between the brake element and dust cap.

8. A bobbin support comprising a hollow sleeve having a shoulder adjacent one end, a supporting member having a bearing head, an anti-friction bearing including a ball race for supporting the sleeve from said bearing head, said ball race surrounding said head and spaced therefrom, bearing balls interposed between the head and race, a cup-shaped ball retainer having a peripheral flange substantially closing the space between the head and race, said race resting on said flange and said retainer cup seating on the shoulder on said sleeve, and means for clamping said retainer on its seat with its flange against the race to retain the balls therein.

9. A bobbin support comprising a hollow sleeve having a shoulder adjacent one end, a supporting member having a bearing head with a spherical bearing surface, an anti-friction bearing including a ball race for supporting the sleeve from

said bearing head, a cup-shaped ball retainer having a peripheral flange substantially closing the space between the head and race, said race resting on said flange and said retainer cup seating on the shoulder on said sleeve, the bottom of said cup being centrally domed to provide a thrust bearing for the bearing head, and means for clamping said retainer on its seat with its flange against the race to retain the balls therein, the cupped shape of the retainer permitting universal motion of the race with respect to said head.

10. A bobbin support comprising a hollow sleeve having a shoulder adjacent one end, a supporting member having a head with a spherical bearing surface within the end of said sleeve, a ball race mounted in the end of said sleeve surrounding the bearing head in spaced relation and substantially concentric therewith, a bearing retainer having a peripheral flange substantially closing the space between the head and race, said retainer being dished to permit universal movement with respect to the head and being seated on said shoulder of the sleeve, the end of said sleeve clamping the race down on the retainer to form a rigid bearing assembly.

11. A bobbin support comprising a hollow sleeve having an internal shoulder spaced from one end, a supporting member having a bearing head, an

anti-friction bearing for supporting the sleeve from said bearing head including a ball race surrounding said head and spaced therefrom, bearing balls interposed between the head and race, and a bearing ball retainer seated on said shoulder and substantially closing the space between the head and race, the end of said sleeve clamping said bearing race against the ball retainer and said retainer against the shoulder in said sleeve.

12. A bobbin support comprising a hollow sleeve having an internal shoulder spaced from one end, a supporting member having a head with a spherical bearing surface, an anti-friction bearing for supporting the sleeve from said bearing head with freedom for universal movement including a ball race surrounding said head and spaced therefrom, bearing balls interposed between the head and race, and a bearing ball retainer seated on said shoulder and substantially closing the space between the head and race, the end of said sleeve clamping said bearing race against the ball retainer and said retainer against the shoulder in said sleeve, said ball retainer being formed to provide a thrust bearing for said bearing head.

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