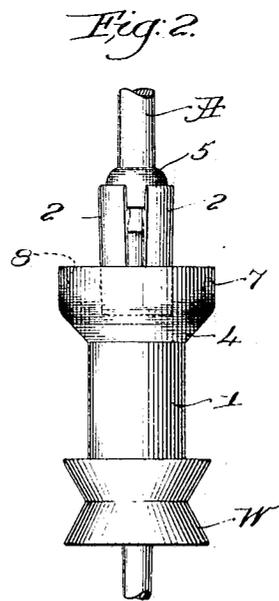
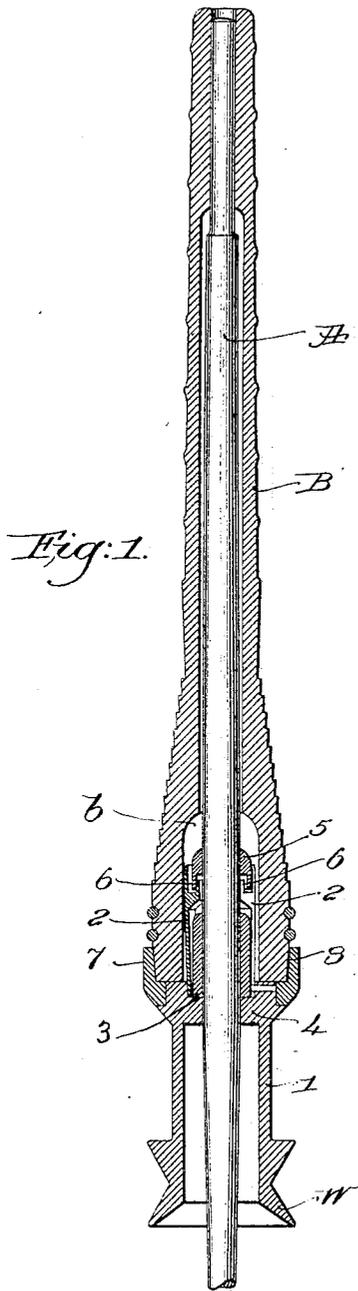


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C. E. LOVEJOY.
BOBBIN DRIVING MEANS FOR ROTATABLE SPINDLES.
APPLICATION FILED DEC. 3, 1904.



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BOBBIN-DRIVING MEANS FOR ROTATABLE SPINDLES.

SPECIFICATION forming part of Letters Patent No. 781,669, dated February 7, 1905.

Application filed December 3, 1904. Serial No. 235,289.

To all whom it may concern:

Be it known that I, CHARLES E. LOVEJOY, a citizen of the United States, and a resident of Lowell, county of Middlesex, State of Massachusetts, have invented an Improvement in Bobbin-Driving Means for Rotatable Spindles, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates particularly to rotatable spindles for spinning, twisting, and the like provided with centrifugally-acting means to engage the bobbin and effect its rotation with the spindle—such, for instance, as in United States Patent No. 734,747 and later ones. In such type of spindle the clutch members are loosely arranged around the spindle and have a limited radial movement, whereby the centrifugal force due to rotation of the spindle effects a driving engagement between such members and the bobbin to rotate it with the spindle. At times the lower end of the bobbin will run a little unsteadily or vibrate laterally, as the unbalanced load will cause the bobbin to take advantage of the looseness of the clutch members, and thereby vibrate more or less.

I have found that by slightly steadying the bobbin at its lower end it will run smoothly without vibration and without in the least interfering with the proper action of the clutching means.

My present invention accordingly has for its object the production of means to steady and prevent lateral movement or vibration of the lower end of a bobbin when used in connection with a rotatable spindle having centrifugally-acting clutching or driving means for internally engaging the bobbin.

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

Figure 1 is a longitudinal sectional view of a rotatable spindle device of the type referred to with one embodiment of my invention applied thereto, the spindle-blade being shown in elevation and the bobbin in section; and

Fig. 2 is a front elevation of the spindle device with the bobbin omitted.

The rotatable spindle A, its attached sleeve 1, having at its lower end a whirl W, the centrifugally-acting clutching members 2, loosely grouped around the spindle and having their lower ends loosely inserted in an annular recess 3 in the head 4 of the sleeve, which head forms a bobbin-rest, and the collar 5, fast on the spindle and adapted to loosely engage upturned portions 6 on the inner sides of the clutch members, may be and are all of well-known construction to those familiar with centrifugally-acting bobbin-driving devices. So far as my invention is concerned the particular construction of the centrifugally-acting clutching means is of no moment.

The clutch members 2 enter the chamber *b* in the head of the bobbin B, Fig. 1, and by centrifugal force engage the walls of the chamber and cause the bobbin to rotate with the spindle. Inasmuch, however, as said members 2 are loosely mounted an unbalanced load may cause the lower end of the bobbin to move laterally or vibrate slightly, and to prevent this I have provided means to steady the lower end of the bobbin and limit such lateral movement. As shown herein, an annular cup-like guard 7 is secured to or forms a part of the head or bobbin rest 4, concentric with the spindle and extending some little distance above the lower ends of the clutch members. The inner wall 8 of the guard is preferably slightly flared to correspond with the tapered lower end generally formed on bobbins, and the internal diameter of the guard is such that the bobbin can freely enter the same and bottom on the bobbin-rest 4, as shown in Fig. 1. While the bobbin can thus be freely inserted in or removed from the guard, the latter prevents any lateral movement or vibration of the lower end of the bobbin and steadies it, while not interfering in the slightest degree with the operation of the centrifugally-acting clutching means.

The fit between the guard and bobbin end is in no sense a driving fit, but, on the contrary, such a loose or easy fit that its only purpose and function is to steady or limit lat-

eral movement of the bobbin and prevent any gyration thereof due to a tendency of the bobbin to move laterally with the clutch members.

5 My invention is not restricted to the precise construction and arrangement herein shown and described, as the same may be varied or modified in different particulars by those skilled in the art without departing from the spirit and scope of my invention.

10 Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a rotatable spindle, and centrifugally-acting means to engage the interior of and effect rotation of the bobbin with the spindle, of an annular, concentric guard fixed with relation to the spindle to freely receive the lower end of the bobbin and prevent lateral vibration thereof.

2. The combination with a rotatable spindle, and centrifugally-acting means to engage the interior of the bobbin and cause it to rotate with the spindle, of non-driving means to engage the lower end of the bobbin externally and prevent lateral vibration thereof.

3. The combination with a rotatable spindle, having an attached whirl, and loosely-mounted centrifugally-acting clutch members to engage the interior of the bobbin and cause ro-

tation thereof with the spindle, of a cup-like guard fixedly connected with the spindle and adapted to freely receive the lower end of the bobbin and limit lateral movement thereof.

4. The combination with a rotatable spindle and an attached sleeve having a whirl at its lower end and a cup-like non-driving guard at its upper end, of centrifugally-acting bobbin-clutching members to engage the interior of and effect rotation of a bobbin when its lower end is inserted in the guard, the latter limiting lateral movement of the bobbin.

5. The combination with a rotatable spindle having a bobbin-rest, and a centrifugally-expandible bobbin-retaining device, to engage the interior of and effect rotation of the bobbin with the spindle, of non-driving means adjacent the bobbin-rest and immovable with relation to the spindle to freely receive and fit loosely around the lower end of the bobbin to limit lateral motion thereof induced by an unbalanced load.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES E. LOVEJOY.

Witnesses:

GEORGE OTIS DRAPER,
ERNEST W. WOOD.