

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN OR RELATING TO BOBBIN HOLDERS FOR TEXTILE MACHINES

(71) I, JOHN MICHAEL NOGUERA, a British Subject, of 1 Greville House, Kinnerton Street, London, S.W.1, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to bobbin holders for textile machines, the holders being of the rotary suspension type having a spindle-like body which can be introduced into the open end of a bobbin, and bobbin retaining and release mechanism for retaining the bobbin so introduced on the body.

The bobbins held on such bobbin holders are usually made to rotate in an uneven manner and some form of brake is necessary to prevent the bobbins from over-running. The most common type of brake consists of a long piece of wire which pivots from a support placed near the top of the bobbin holder and which rests at its lower end against the bobbin itself. Brakes of this type perform satisfactorily but they are rather expensive to manufacture. As a cheaper alternative many efforts have been made to produce a small brake within the cap of the bobbin holder. Such a design of brake is cheaper, but so far all attempts at making such a brake have resulted in designs where the braking force varies with the weight of the bobbin hanging on the bobbin holder, a full bobbin receiving a heavier braking force than an empty bobbin. This is wrong because, although at first sight it would seem that a greater braking force would be better for large bobbins and a lesser force for small ones, it must be borne in mind that the bobbins rotate extremely slowly, in fact, in a series of jerks, the bobbin constantly turning a little, stopping, and turning again. If a greater braking force is provided for the larger diameter bobbins, then to start rotation of a large bobbin there has to be overcome not only the greater inertia of the large bobbin, but also this

greater braking force. This tends to cause the roving wrapped on the bobbin to stretch as the roving consists of textile fibre only loosely twisted together.

According to the present invention there is provided, in a bobbin holder of the type specified, a brake consisting of a device arranged to exert mechanically on the body a braking force that is unaffected by the weight or size of the bobbin retained on the body, the device being disposed within an overlying cap.

Conveniently the device just mentioned is disposed between a member rotatably supporting the body and the body and constitutes a seal serving to seal a bearing between the support member and the body.

For a better understanding of the invention and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawing, in which:—

Figure 1 is a side view, partly broken away and in section, of part of a first form of bobbin holder,

Figure 2 is a view, similar to Figure 1, of part of a second form of bobbin holder,

Figure 3 is a view, similar to Figures 1 and 2, of a modified form of the bobbin holder of Figure 2, and

Figure 4 is a sectional view (with some parts omitted) taken on the line IV—IV of Figure 3.

Referring first to Figure 1, this Figure shows the upper end of the bobbin holder, the holder having a spindle-like body 1 which can be introduced into the open end of a bobbin and bobbin retaining and release mechanism (not shown) for retaining the bobbin so introduced on the body 1.

At the upper end shown in the Figure the body 1 is rotatably and swingably attached to the head of a bolt 2, forming a support member for the body 1, through the intermediary of a ball race having an outer skirted race member 3 which embraces the upper end of the body 1 and is secured

thereto by a transverse rivet 4 or in any other known manner. The shank of the bolt 2 projects through an opening in the top of the outer skirted race member 3 which is encircled by a device in the form of a collar 5 which acts as a seal against the ingress of dust and dirt into the bearing. The shank of the bolt 2 is, in use of the holder, suspended from an overhead support member or creel by engagement with a co-operating nut in well known manner.

The bolt 2 also carries an outer skirt-like cap 6 which overlies and generally protects the ball race mechanism. The cap 6 is non-rotatable on the bolt 2, a tongue (not shown) of the cap 6 being engaged in a longitudinal slot 2A in the bolt 2. A nut, not shown, threaded onto the bolt 2, retains the cap in position.

The collar 5 is also provided with a tongue to engage the undersurface of the cap 6 or alternatively the bolt 2, whereby it is prevented from rotating with the body 1. Thus during rotation of the body 1 the device formed by the collar 5 rubs on the race member 4 to exert on the body 1 a gentle but constant braking action, the braking force exerted being independent of the weight or size of the body and depending on the shape, size and weight of the collar 5. These characteristics of the collar 5 can, of course, be precisely selected during manufacture of the collar 5.

Referring next to Figure 2, this Figure shows the upper end of the bobbin holder, the holder having a spindle-like body 1A which can be introduced into the open end of a bobbin and bobbin retaining and release mechanism (not shown) for retaining the bobbin so introduced on the body 1A.

At the upper end shown in the Figure the body 1A is rotatably and swingably attached to the head of a bolt 2A, forming a support member for the body 1A, through the intermediary of a ball race having an outer skirted race member 3A which embraces the upper end of the body 1A and is secured thereto by a transverse rivet 4A or in any other known manner. The shank of the bolt 2A projects through an opening in the top of the outer skirted race member 3A which is encircled by a washer 5A formed of metal or plastics material which acts as a seal against the ingress of dust and dirt into the bearing, the washer 5A being urged down into contact with the outer race member 3A by a light spring 7. The washer 5A is held against rotation by a key 8 thereof that is engaged in a keyway in the bolt 2A.

As in the form of Figure 1, the shank of the bolt 2A is, in use of the holder, suspended from an overhead support member or creel by engagement with a co-operating nut in well known manner. The

bolt 2A also carries an outer skirt-like cap 6A which overlies and generally protects the ball race mechanism. The cap 6A is non-rotatable on the bolt 2A, a tongue (not shown) of the cap 6A being engaged in a longitudinal slot in the bolt 2A. A nut, not shown, threaded onto the bolt 2A, retains the cap in position.

Since the washer 5A is prevented from rotating with the body 1 the device formed by the washer 5A and spring 7 rubs on the race member 4A to exert on the body 1A a gentle but constant braking action, the braking force exerted being independent of the weight or size of the body and depending mainly on the force exerted by the spring 7 (although, of course, to some extent on the shape, size and weight of the washer 5A). The force exerted can thus be varied by changing the spring 7 for one of different characteristics.

Finally, referring to Figures 3 and 4, parts corresponding to parts of the form of Figure 2 are given the same reference numerals in Figures 3 and 4. Hence it will be appreciated that in the modified form of Figures 3 and 4 the principle modification is that the washer 5A¹ has two, opposed, flats 9 on its outer edge which engage with two inwardly directed lugs 10 on the cap 6A¹, these flats and lugs replacing the key and keyway of the form of Figure 2 for preventing rotation of the washer 5A. The form of Figures 3 and 4 is otherwise similar to that of Figure 2.

It will be appreciated that in each of the bobbin holders described there is provided a device that serves both as a brake for the body of the holder, exerting its braking force mechanically, and as a seal for the bearing between the body and the bolt supporting the body, the braking force exerted on the body being unaffected by the weight or size of the bobbin retained on the body, and this device being disposed within an overlying cap.

WHAT I CLAIM IS:—

1. In a bobbin holder of the type specified, a brake consisting of a device arranged to exert mechanically on the body a braking force that is unaffected by the weight or size of the bobbin retained on the body, the device being disposed within an overlying cap.

2. A brake as claimed in claim 1, wherein said device is disposed between a member rotatably supporting the body and the body and constitutes a seal serving to seal a bearing between the support member and the body.

3. A brake as claimed in claim 1 or 2, wherein said device is held by the member rotatably supporting the body so that said



thereto by a transverse rivet 4 or in any other known manner. The shank of the bolt 2 projects through an opening in the top of the outer skirted race member 3 which is encircled by a device in the form of a collar 5 which acts as a seal against the ingress of dust and dirt into the bearing. The shank of the bolt 2 is, in use of the holder, suspended from an overhead support member or creel by engagement with a co-operating nut in well known manner.

The bolt 2 also carries an outer skirt-like cap 6 which overlies and generally protects the ball race mechanism. The cap 6 is non-rotatable on the bolt 2, a tongue (not shown) of the cap 6 being engaged in a longitudinal slot 2A in the bolt 2. A nut, not shown, threaded onto the bolt 2, retains the cap in position.

The collar 5 is also provided with a tongue to engage the undersurface of the cap 6 or alternatively the bolt 2, whereby it is prevented from rotating with the body 1. Thus during rotation of the body 1 the device formed by the collar 5 rubs on the race member 4 to exert on the body 1 a gentle but constant braking action, the braking force exerted being independent of the weight or size of the body and depending on the shape, size and weight of the collar 5. These characteristics of the collar 5 can, of course, be precisely selected during manufacture of the collar 5.

Referring next to Figure 2, this Figure shows the upper end of the bobbin holder, the holder having a spindle-like body 1A which can be introduced into the open end of a bobbin and bobbin retaining and release mechanism (not shown) for retaining the bobbin so introduced on the body 1A.

At the upper end shown in the Figure the body 1A is rotatably and swingably attached to the head of a bolt 2A, forming a support member for the body 1A, through the intermediary of a ball race having an outer skirted race member 3A which embraces the upper end of the body 1A and is secured thereto by a transverse rivet 4A or in any other known manner. The shank of the bolt 2A projects through an opening in the top of the outer skirted race member 3A which is encircled by a washer 5A formed of metal or plastics material which acts as a seal against the ingress of dust and dirt into the bearing, the washer 5A being urged down into contact with the outer race member 3A by a light spring 7. The washer 5A is held against rotation by a key 8 thereof that is engaged in a keyway in the bolt 2A.

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Since the washer 5A is prevented from rotating with the body 1 the device formed by the washer 5A and spring 7 rubs on the race member 4A to exert on the body 1A a gentle but constant braking action, the braking force exerted being independent of the weight or size of the body and depending mainly on the force exerted by the spring 7 (although, of course, to some extent on the shape, size and weight of the washer 5A). The force exerted can thus be varied by changing the spring 7 for one of different characteristics.

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It will be appreciated that in each of the bobbin holders described there is provided a device that serves both as a brake for the body of the holder, exerting its braking force mechanically, and as a seal for the bearing between the body and the bolt supporting the body, the braking force exerted on the body being unaffected by the weight or size of the bobbin retained on the body, and this device being disposed within an overlying cap.

WHAT I CLAIM IS:—

1. In a bobbin holder of the type specified, a brake consisting of a device arranged to exert mechanically on the body a braking force that is unaffected by the weight or size of the bobbin retained on the body, the device being disposed within an overlying cap.

2. A brake as claimed in claim 1, wherein said device is disposed between a member rotatably supporting the body and the body and constitutes a seal serving to seal a bearing between the support member and the body.

3. A brake as claimed in claim 1 or 2, wherein said device is held by the member rotatably supporting the body so that said



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device is prevented from rotating with the body.

4. A brake as claimed in claim 1, 2 or 3, wherein said device is a collar disposed to exert on the body, during rotation thereof, a constant braking action the force of which depends on the shape, size and weight of the collar.

5. A brake as claimed in claim 1, 2 or 3, wherein said device is formed by a washer and a spring that acts on the washer to cause the washer to exert on the body, during rotation thereof, a constant braking action.

6. In a bobbin holder of the type specified, a brake substantially as hereinbefore described with reference to Figure 1, or Figure 2, or Figures 3 and 4 of the accompanying drawings.

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