July 26, 1960 W. W. HEWITT 2,946,538

BOBBIN HOLDER

Filed Feb. 25, 1958 2 Sheets-Sheet 1

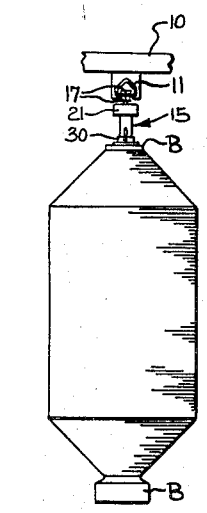


Fig-1

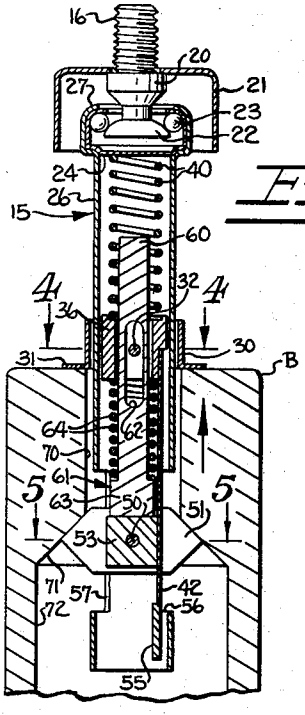


Fig-2

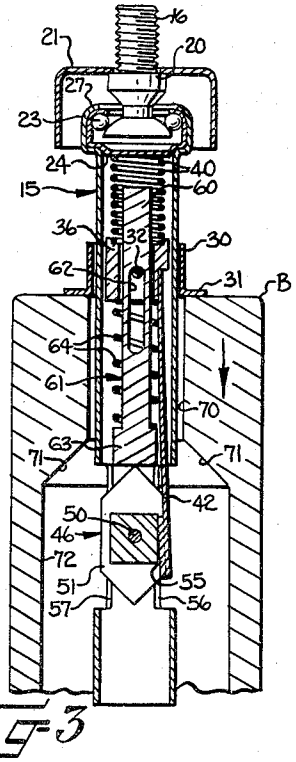


Fig-3

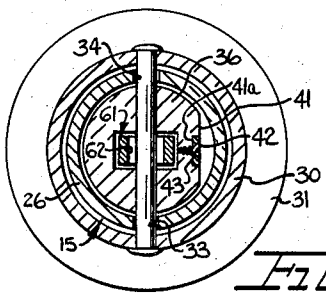


Fig-4

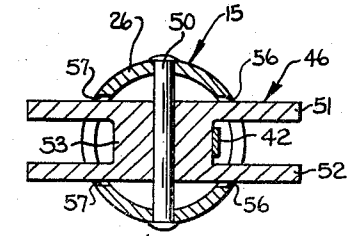


Fig-5

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BOBBIN HOLDER

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2 Sheets-Sheet 2

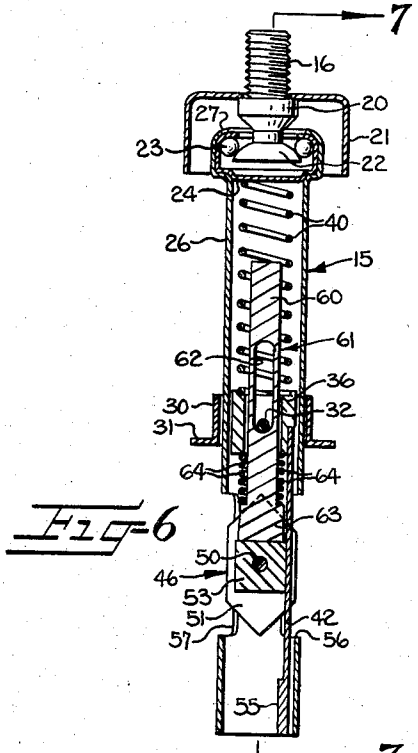


Fig-6

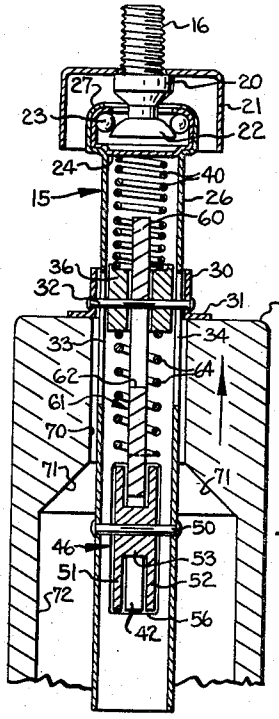


Fig-7

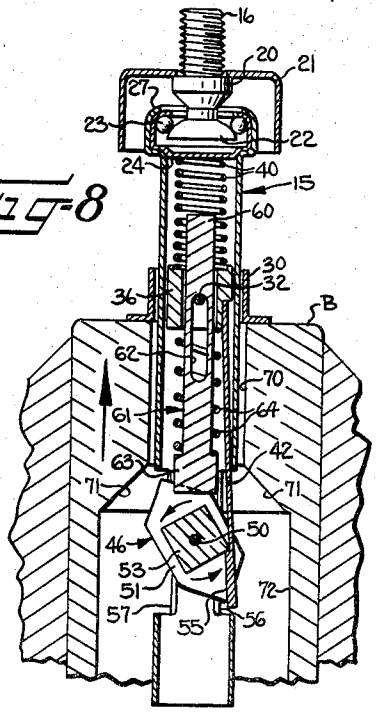


Fig-8

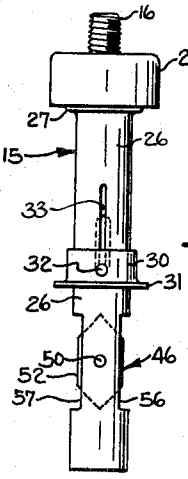


Fig-9

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2,946,538

BOBBIN HOLDER

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5 Claims. (Cl. 242—130.2)

This invention relates to pendulous type bobbin holders for spinning frames and the like and more particularly to an improved mechanism for positively supporting the bobbin on the bobbin holder.

Heretofore, pendulous type bobbin holders have been used to support bobbins and they may be grouped in two main classes or types. The first type comprises a tubular support member adapted to be placed inside of the open upper end of the bobbin and having resilient outwardly extending members carried thereby to engage the inner surface of the hollow opening at the top of the bobbin. The main objections to this type of support have been that after long use the resilient members tend to weaken and at times the bobbin will drop off the holder, particularly when the creel is jarred such as by the forcible placement of a bobbin adjacent the supported bobbins.

The second type of pendulous bobbin support comprises a tubular support member having a pivotally supported latching member which is movable from a vertical position within the support housing to a position perpendicular to the housing so that the latching member engages the hollow center of the bobbin to support the same. The latch member of this type bobbin support is rotated through linkage connected to a vertically movable sleeve on the support housing and vertical movement of the sleeve member may be effected by vertical movement of the bobbin. While this second type of pendulous bobbin holder does positively support the bobbin, this type has not been satisfactory in use, since the latch turning linkage inside the bobbin holder is susceptible to jamming due to wear so that the locking or latch member may not be rotated. The linkage will fail to rotate the latch member far enough when the sleeve is not moved as far as intended so that the bobbin can not be easily removed. Also, bobbin holders of this type heretofore in use have required that the operating sleeve be moved a certain distance to operate the latch and this has limited the use of a particular bobbin holder to use with a particular size bobbin.

With the foregoing in mind, it is the primary object of this invention to provide a pendulous type bobbin support of the second type referred to above having improved latch rotating linkage carried by said holder as well as means operable in cooperation with said latch rotating means for engaging and resiliently holding the latching member in both the vertical and horizontal positions after rotation of the latch member.

It is another object of this invention to provide an improved latch rotating means for a pendulous bobbin support which may be economically manufactured, easily assembled and will provide jam-free operation over a long period of time.

It is another object of this invention to provide an improved latch rotating means for a pendulous bobbin support having latch rotating linkage comprising a latch rotating pawl operable by vertical movement of a sleeve surrounding the bobbin support and a latch locking

member cooperating with movement of the sleeve and the latch rotating pawl to engage and at times partially rotate the latch member in either the bobbin supporting position or in the bobbin releasing position upon complete or partial operation of the latch rotating pawl.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of a typical bobbin supported on the lower end of the pendulous bobbin support;

Figure 2 is an enlarged vertical sectional view through the bobbin support and the upper end of the bobbin shown in Figure 1;

Figure 3 is a view similar to Figure 2 except showing the bobbin after it has been raised to substantially its upper limit and ready to be lowered and removed from the bobbin support;

Figure 4 is an enlarged horizontal sectional view through the bobbin holder and being taken substantially along the line 4—4 in Figure 2;

Figure 5 is an enlarged horizontal sectional view through the bobbin holder and being taken substantially along the line 5—5 in Figure 2;

Figure 6 is a view similar to Figure 3 except showing the position of the bobbin holder after the bobbin has been completely removed therefrom;

Figure 7 is a vertical sectional view througth the bobbin holder, being taken substantially along the line 7—7 in Figure 6 except showing some of the parts in different positions with the bobbin being raised on the bobbin support;

Figure 8 is a view similar to Figures 2, 3 and 6 but showing the bobbin being raised to move the sleeve member surrounding the bobbin holder and start rotation of the latch member through engagement therewith of the latch rotating pawl;

Figure 9 is an enlarged side elevation of the bobbin holder removed from the creel or support and showing the bobbin latch member in inoperative or bobbin receiving position.

Referring to the drawings and in particular to Figure 1, there is shown a portion of an overhead creel or support arm indicated at **10** adapted to adjustably support a plurality of auxiliary bobbin support arms **11**, only one of which is shown. The bobbin support or holder, indicated broadly at **15**, is supported for vertical adjustment on the support arm **11** by a supporting bolt **16** suitably secured to the creel arm **11** by any suitable means such as lock nuts **17** (Figure 1). The bolt **16** is provided with a shoulder **20** which supports a lint or dust cap **21** which extends downwardly and surrounds the upper end of the bobbin holder **15** to provide protection from dirt, moisture, lint and the like.

The lower end of the support bolt **16** is provided with a partially spherical head (Figure 2) **22** forming a lower race for a set of ball bearings **23**. The outer race for the set of ball bearings is formed by the curved upper wall portion of a bearing housing **24**. The bobbin holder **15** includes a cylindrical hollow body portion or member **26** curved at its upper end as at **27** to permanently attach the same to the bearing housing **24** and thus is universally swiveled to the support bolt **16** by means of the ball bearings **23** mounted for rotation on the spherical head **22** of the bolt **16**.

A sleeve **30** surrounds the body or housing **26** and has an annular flange or foot portion **31** formed integral with the lower end thereof. The sleeve **30** loosely surrounds the housing **26** and is adapted to have vertical sliding movement along the body portion **26** which vertical movement is limited by a pin **32** (Figures 4 and 7)

suitably secured at opposite ends in the sleeve member 30 and penetrating vertically extending slots 33 and 34 formed in diametrically opposed portions of the body portion 26. The medial portion of the pin 32 penetrates and supports a guide member 36 mounted for vertical sliding movement inside of the body 26 and the guide 36 is vertically movable with vertical movement of the sleeve 30. The guide member 36 and sleeve 30 are normally urged downwardly to substantially the position shown in Figure 6 by a relatively heavy compresssion spring 40, the upper end of which bears against the lower portion of the bearing housing 24 and the lower end of which is suitably seated in the upper surface of the guide member 36.

The guide member 36 is generally circular (Figure 4) but is provided with a flattened portion 41 having a notch 42 therein for reception of the upper end of a latch rotating pawl or actuating member 42 which is preferably formed of a relatively thin resilient material throughout most of its length. The upper end of the latch actuating member 42 may be suitably secured in the notch 41*a* by any suitable means such as brazing, welding or by a screw as indicated at 43 in Figure 4. The inner surface of the latch actuating member 42 is normally urged into resilient sliding engagement with the central cam portion of a latch indicated broadly at 46, which is substantially H-shaped in longitudinal cross-section (Figure 5).

The latch 46 is pivotally supported in the lower portion of the housing 26 on a pin 50, opposite ends of which are suitably secured in the body or housing 26. The latch 46 includes a pair of spaced latch plates 51 and 52 which are held in spaced apart fixed relation to each other by a substantially square cam portion 53 formed integral with the latch plates 51 and 52. The lower end of the latch pawl 42 is provided with a thickened portion forming an abutment which is adapted to at times, in a manner to be presently described, engage the cam portion 53 of the latch 46 and rotate the latch plates 51 and 52 from either a horizontal or a vertical position to the opposite position. Thus, the latch plates 51 and 52 are at times disposed in substantially perpendicular relation to the housing 26 (Figure 2) and at other times are disposed in a vertical position within the lower end of the housing 26 (Figures 3, 6, 7 and 9). When the latch 46 is rotated from one position to the other, the latch plates 51 and 52 pass through slots 56 and 57 cut in diametrically opposed portions of the housing 26.

The guide member 36 is penetrated by the upper stem portion 60 of a latch positioning or locking member broadly indicated at 61. The stem portion 60 is substantially rectangular in cross-section and has a vertically extending slot 62 positioned therein for reception of the pin 32. The lower end of the latch positioning or locking member 61 is provided with an enlarged head 63 which is wider than but substantially the same thickness as the stem 60 (Figure 7). The head 63 of the latch positioning or locking member 61 supports the lower end of a compression spring 64 which is preferably of lighter weight and weaker than the spring 40. The upper end of the compression spring 64 bears against the lower surface of the guide member 36 and surrounds the stem portion 60 of the locking member 61.

Before placing a bobbin on the bobbin holder 15, the parts will be positioned as shown in Figure 6 because the spring 40 will force the guide member 36 and its sleeve 30 downwardly until the pin 32 is positioned against the bottom of the slot 62 in the stem portion 60 of the latch positioning or locking member 61 and the spring 64 will resiliently urge the flat bottom of the head 63 downwardly into engagement with a flat surface of the cam portion 53 between the latching plates 51 and 52. A bobbin B may then be positioned to be supported on the bobbin holder 15 by first raising the bobbin B so that the body 26 of the bobbin support 15 passes into a relatively small opening 70 at the upper end of the bobbin B (Figure 8).

When the upper end of the bobbin B engages the flange 31 to raise the sleeve 30, the guide member 36 and the pin 32 are raised against pressure of the spring 40 and the lower end of the latch locking member 61 will remain in resilient engagement with the latch 46 until the pin 32 engages the upper end of the slot 62 in the stem portion 60. Then as the latch locking member 61 is raised, the abutment 55 on the lower end of the latch rotating pawl 42 will engage the cam portion 53 to rotate the same as illustrated in Figure 8.

With continued upward movement of the bobbin B, the slots 33 and 34 will provide a stop for the sleeve 30 when the upper ends are engaged by the pin 32. After the upper limit of movement has been reached by the bobbin B, it may then be lowered so that the spring 40 will urge the sleeve 30 downwardly and the locking plates 51 and 52 of the latch 46 will engage a shoulder 71 (Figure 2) joining the relatively small opening 70 with a relatively large opening or passageway 72 formed in the body of the bobbin B. During the first portion of downward movement of the bobbin B and sleeve member 30, the latch positioning and locking member 60 will be supported by the pin 32 engaging the upper end of the slot 62.

When the lower end of the latch positioning or locking member 61 engages the latch 46, the pin 32 will be moved downwardly in the slot 62 (Figure 2) so that the member 61 will resiliently hold or lock the latch 46, in this case, in a horizontal position under spring pressure of the compression spring 64. Thus if for any reason the pawl 42 fails to rotate the latching member 46 far enough to turn the same a complete ninety degrees, the lower end of the member 61 will engage and complete rotation of the latch 46. One case where rotation of the latch 46 might not be completed by the pawl 42 would be where the operator failed to raise the bobbin high enough before lowering the same.

It is also seen that the shoulder 71 of the bobbin B is resiliently held in engagement with the latching member 46 by downward pressure of the spring 40 against the guide 36 and sleeve 30 to thus press downwardly on the upper end of the bobbin B. This will prevent any vibration or dancing of the bobbin B on the bobbin holder 15 and with the lower end of the latch positioning or locking member 61 resiliently urged into engagement with the latch 46 there cannot be any accidental rotation of the latch 46 from the desired position.

When it is desired to again remove the bobbin B from the bobbin holder 15, it is merely necessary for an operator to raise the bobbin B from the supported position shown in Figure 2 to the position shown in Figure 3, whereupon, the abutment 55 on the pawl 42 will engage and rotate the latch 46 so that the latch 46 will be positioned in substantially a vertical position inside of the body 26. It will be noted that the latch positioning or locking member 61 will remain in engagement with the latch 46 until the pin 32 engages the upper end of the slot 62 and will then be raised out of engagement before the abutment 55 on the pawl member 42 engages and starts rotating the latch 46. After the sleeve 30 has been raised, as just described to rotate the latch 46, the bobbin B may then be lowered and will slide off the lower end of the holder 15. As the bobbin B is removed, the spring 40 will urge the parts, including the sleeve 30, to the position shown in Figures 6 and 9. By referring to Figure 6, it will be observed that the lower end of the latch positioning or locking member 61 is in resilient engagement with a flat portion of the cam portion 53 of the latch member 46, to thus prevent accidental rotation thereof and hold the latch member 46 in position to receive another bobbin.

It is thus seen that a pendulous bobbin support has been provided which has a rotatable latch member adjacent the lower end thereof and linkage connecting the

same to a sleeve operated by movement of a bobbin to turn the latch member from one position to another. The pendulous bobbin support is also provided with improved means for engaging and resiliently holding the latch in the desired position which moves out of engagement with the latch and also moves into engagement with the latch after a predetermined amount of movement of the bobbin B.

In the drawings and specification there has been set forth a preferred embodiment of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. A pendulous support for bobbins and the like comprising a cylindrical housing supported at its upper end, a latch pivotally mounted within said housing, a sleeve surrounding and axially movable along said housing, a pawl operatively connected at one end to said sleeve and the other end being engageable with said latch to rotate the same with movement of said sleeve in one direction, a locking member mounted for axial movement inside said housing and engageable at one end with said latch, a pin fixed at opposite ends in said sleeve and penetrating said locking member, and said locking member having an elongated slot through which said pin passes to thereby permit axial movement of said locking member relative to said sleeve and said pawl.

2. A pendulous support for bobbins and the like comprising a cylindrical housing supported at its upper end, a latch pivotally mounted within said housing, a sleeve surrounding and axially movable along said housing, a pawl operatively connected at one end to said sleeve and the other end being engageable with said latch to rotate the same with movement of said sleeve in one direction, a locking member mounted for axial movement inside said housing and engageable at one end with said latch, a pin fixed at opposite ends in said sleeve and penetrating said locking member, said locking member having an elongated slot through which said pin passes thereby permitting limited axial movement of said locking member relative to said sleeve and said pawl, first spring means normally urging said pawl and said sleeve downwardly, and second spring means normally urging said locking member downwardly relative to said sleeve and into engagement with said latch.

3. A pendulous support for bobbins and the like comprising a vertically disposed hollow cylindrical housing supported at its upper end, a latch member pivotally mounted within and adjacent the lower end of said housing, a sleeve surrounding and axially movable along said housing, a guide mounted inside said housing and connected in fixed axial relationship to said sleeve, first spring means mounted inside said housing and above said guide to normally urge said guide and sleeve downwardly, a pawl connected at its upper end to said guide and at its lower end engageable with said latch to rotate the same

with upward movement of said sleeve, a locking member disposed within said housing and loosely penetrating said guide, said locking member being mounted for axial movement within said guide, means connecting said locking member and said guide to limit the axial movement of said locking member relative to said guide, and second spring means positioned below said guide and surrounding said locking member to normally urge said locking member to its lowermost limit of travel relative to said guide.

4. A pendulous support for bobbins and the like comprising a vertically disposed hollow cylindrical housing supported at its upper end, a latch member pivotally mounted within and adjacent the lower end of said housing, a sleeve surrounding and axially movable along said housing, a guide mounted for axial movement inside said housing, a pin fixed in said sleeve and penetrating said guide to connect said guide to said sleeve, first spring means mounted inside of said housing and above said guide to normally urge said guide and sleeve downwardly, a pawl connected at its upper end to said guide and at its lower end engageable with said latch to rotate the same with upward movement of said sleeve, a locking member disposed within said housing and penetrating said guide, said locking member being mounted for axial movement within said guide, said locking member having an elongated slot through which said pin loosely passes to limit the axial movement of said locking member relative to said guide, and second spring means positioned below said guide and surrounding said locking member to normally urge said locking member to its lowermost limit of travel relative to said guide.

5. A pendulous support for bobbins and the like comprising an elongated tubular body adapted to be suspended at one end, a latch journaled in a lower portion of the body, a pawl mounted for axial movement in said body and engaging said latch, pawl actuating means mounted for limited axial movement on the outside of said body, a fixed connection between the pawl and said actuating means, a locking member axially movable within said body and relative to said pawl, means movable with the pawl for limiting movement of said locking member relative to the pawl, spring means resiliently urging the pawl and the locking member downwardly relative to each other and relative to the body, the locking member being engageable at its lower end with the latch to prevent rotation thereof while the pawl and its actuating means occupy lowered positions, and said limiting means serving to move the locking member away from said latch upon upward active movement of the pawl a given distance relative to the body and the latch.

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