Oct. 15, 1940. T. C. SAYLES ET AL 2,217,922

BOBBIN HOLDER

Filed April 27, 1938 2 Sheets-Sheet 1

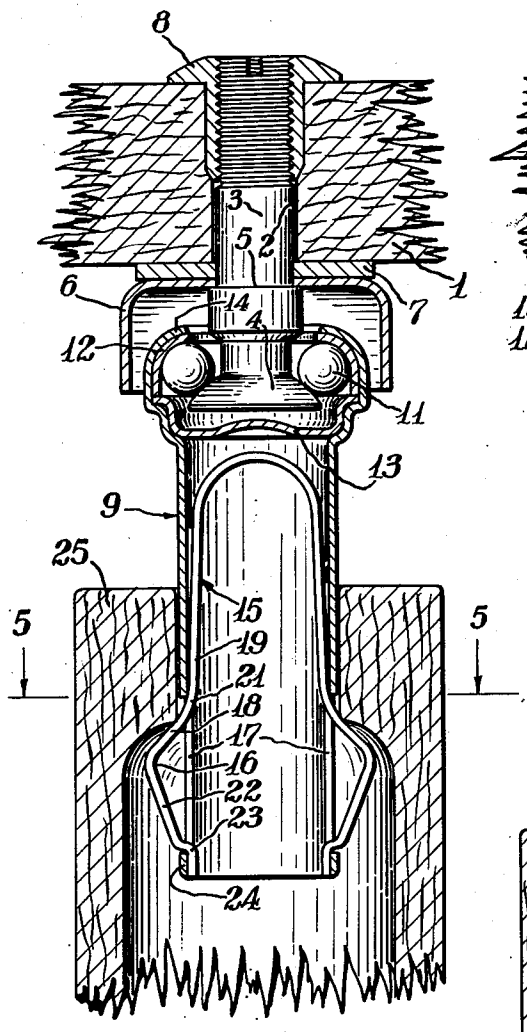


Fig. 1

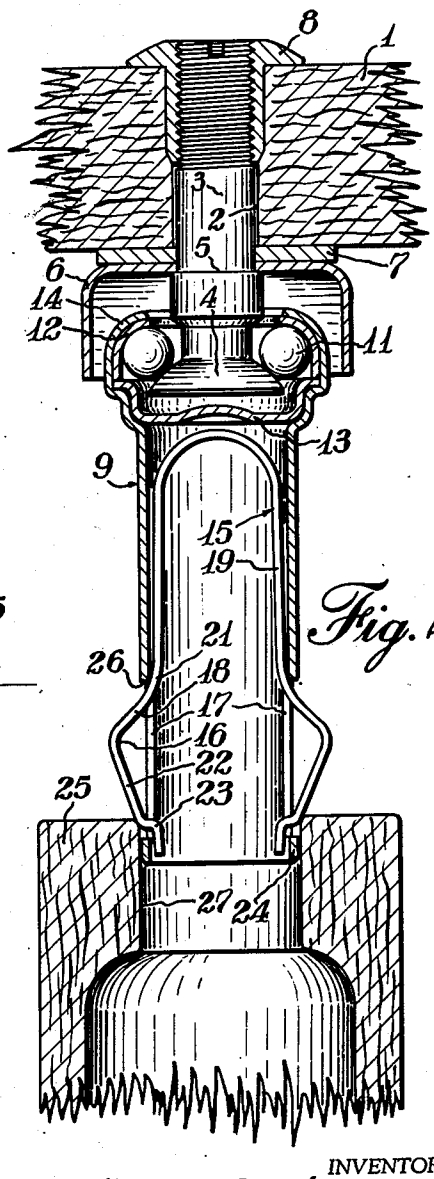


Fig. 2

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BOBBIN HOLDER

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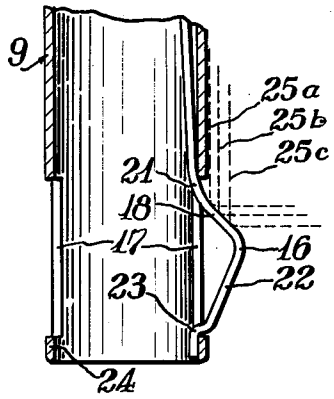


Fig. 4

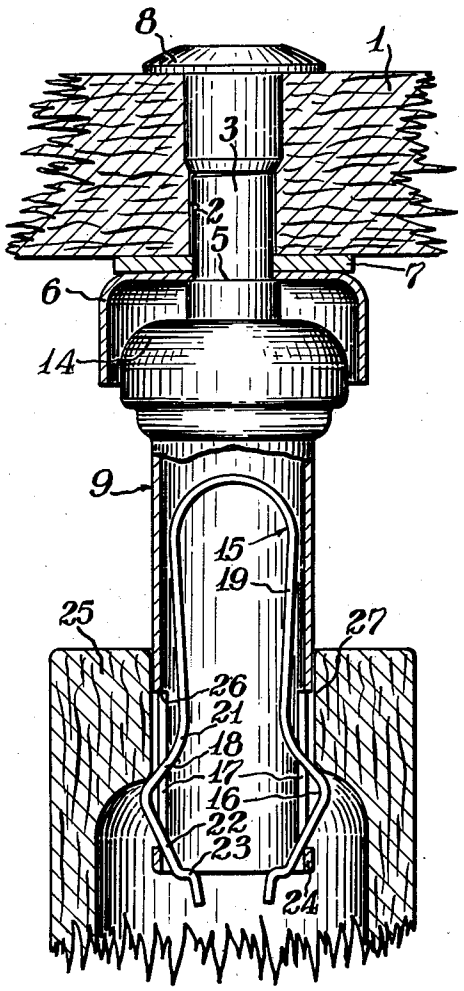


Fig. 3

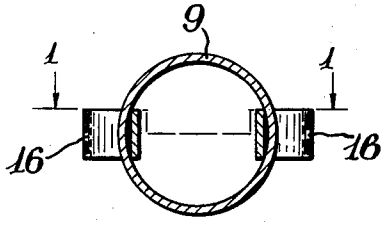


Fig. 5

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UNITED STATES PATENT OFFICE

2,217,922

BOBBIN HOLDER

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Application April 27, 1938, Serial No. 204,650

5 Claims. (Cl. 242—130)

The present invention relates to bobbin holders for spinning frames and the like and more particularly to an improved detachable connection between a bobbin and a pendulous support.

On spinning frames having commercial forms of bobbin holders of the pendulous type such as disclosed in the patent to Hasbrouck et al. No. 2,038,286, the loaded bobbins are pressed onto the holder from below, and are held by a spring detent in the holder which expands within the bore of the bobbin and resists removal thereof. When this detent is formed as shown in said patent, considerable force is required to press the bobbin on the holder if the opening in the bobbin is so small as to closely fit the holder. On the other hand, if the bobbin opening is oversize, the detent spring must be quite stiff in order to prevent the bobbin from dropping off, particularly when the creel board is jarred by the forcible application of an adjacent bobbin.

Since the sizes of the openings in commercial bobbins vary quite widely, it has been found necessary to employ such stiff detent springs to take care of the oversize bobbins, that considerable exertion is required of the operator to replace bobbins having small openings. Moreover, in course of time the detents wear the edges of the openings in the bobbins, which conduces to non-uniformity in the retaining action thereof.

It is an object of the present invention to provide a pendulous bobbin support having novel and improved retaining means for the bobbin.

It is another object to provide such a device in which the collapsing of the detent upon application of the bobbin to the support while providing the necessary resistance to removal thereof.

It is a further object to provide such a device in which the action of the detent is substantially uniform irrespective of considerable variation in the sizes of the openings in the bobbins.

It is another object to provide such a device in which the wear of the edges of the openings in the bobbin by the detent is reduced to a negligible amount.

It is another object to provide such a device in which the collapsing of the detent upon application and removal of the bobbin is caused mainly by sliding movement of the detent in the bobbin holder, rather than by the sliding movement of the bobbin over the detent.

Further objects and advantages will be apparent from the following description taken in connection with the accompanying drawings in which:

Fig. 1 is a vertical sectional view of a preferred embodiment of the invention, the section being taken substantially on the line 1—1 of Fig. 5, the parts being shown in operative position;

Fig. 2 is a similar view showing the parts of the bobbin holder in the positions assumed at the start of the application of a bobbin to the holder;

Fig. 3 is a similar view showing the positions of the parts during removal of the bobbin from the holder;

Fig. 4 is a sectional detail showing the supporting engagement of the bobbin holder detent with bobbins of various sizes; and

Fig. 5 is a section of the bobbin holder taken substantially on the line 5—5 of Fig. 1.

In Fig. 1 of the drawings there is illustrated a creel board 1, in a vertical opening 2 of which is mounted a bearing bolt 3 having bearing cone 4 at its lower end provided with a shoulder 5 which clamps a dust cap 6 against a washer 7 on the lower side of the creel board 1 by means of a sleeve nut 8.

A bobbin holder including a cylindrical body portion 9 is universally swiveled to the bearing bolt 3 by means of ball bearings 11 bearing on the cone 4 and running in a race 12 mounted in the upper end of the body 9 and held in clamping engagement with an abutment and closure disc 13 by spinning over the enlarged upper end of the holder body as indicated at 14.

Means are provided for yieldably retaining a bobbin on the body member 9 of the holder, this means being in the form of a yielding detent member 15 having bowed portions 16 projecting through slotted openings 17 formed near the lower end of the bobbin holder body.

According to the present invention, the bowed portions 16 of the detent 15 are formed to facilitate the application of a bobbin to the holder, and to resist the removal of the bobbin by a force which is substantially constant irrespective of considerable variations in the size of the bore of the bobbin. As here shown, this is accomplished by forming the upper portions 18 of the bowed portions 16 substantially straight, with a constant inclination to the axis of the holder, and merging gradually into the body portion 19 of the detent as shown at 21. The lower portions 22 of the bowed portions 16 are also substantially straight but are of a greater length than the portions 18 and thus have an inclination to the axis of the holder which is less than said inclination of the portions 18, and terminate in comparatively abrupt shoulders 23 which normally engage the abutments 24 formed in the bobbin holder body 9 at the bottom of the slots 17. The detent

15 is placed in the bobbin holder body under considerable initial pressure which causes the bowed portions 16 to be projected forcibly through the slots 17 and thereby yieldingly maintain the detent in its normal longitudinal position in the bobbin holder.

In the operation of the device, initial application of a bobbin 25 to the holder causes the detent 15 to be pushed upwardly in the holder as shown in Fig. 2 of the drawings whereby the shoulders 26 at the upper ends of the slots 17 in the bobbin holder body 9 engage the inclined portions 21 and 18 of the detent, causing the detent to be collapsed sufficiently to enter the bore 27 of the bobbin, whereupon the bobbin is slid into operative position as shown in Fig. 1 where it is supported on the inclined portions 18 of the detent, downward movement of the detent in the holder being prevented by the engagement of shoulders 23 with abutments 24.

When it is desired to remove the bobbin, downward force applied to the bobbin will cause initial collapsing movement of the detent 15 by engagement of the bobbin with the inclined portions 18 thereof, thus disengaging shoulders 23 from abutments 24. Further downward movement of the bobbin carries the detent with it as illustrated in Fig. 3 whereby the abutments 24 engage the inclined portions 22 and complete the collapsing of the detent sufficiently to permit removal of the bobbin, whereupon the detent snaps up into its original position.

It will be seen by reference more particularly to Fig. 4 of the drawings that bobbins 25a, 25b and 25c having various sizes of openings are retained by the detent with substantially uniform resistance to removal inasmuch as the inclination of the portion 18 of the detent is substantially constant so that the pressure on the bobbin necessary to disengage the shoulder 23 of the detent is substantially constant regardless of the location of the engagement of the bobbin with the detent. It will further be noted that inasmuch as the collapsing of the detent is effected largely by the engagement of the shoulders or abutments 24 and 26 of the bobbin holder, the force necessary to collapse the detent is quite uniform, and the attendant wear of the bore of the bobbin is very small.

Although but one form of the invention has been shown and described in detail, it will be understood that other forms are possible and that various changes may be made in the design and arrangements of the parts without departing from the spirit of the invention as defined in the claims appended hereto.

What is claimed is:

1. In a vertical bobbin holder, a hollow cylindrical body member having diametrically opposed slots adjacent the bottom thereof, and a bifurcated expansive detent spring in said body member having laterally extending bowed portions protruding through said slots, each of said bowed portions including a pair of substantially straight portions of substantial length inclined to the axis of said holder in opposite directions and merging together at a substantially common point.

2. In a bobbin holder, a hollow cylindrical body member, means for pendulously swiveling the body member from a creel board, and a yielding detent in the body member having laterally extending bowed portions projecting outside said body member through slots provided in the wall of said body member, each of said bowed portions including a pair of substantially straight portions of substantial length forming an angle, and certain of said straight portions having an inclination to the axis of said holder greater than the inclination to the axis of the holder of certain other of said straight portions.

3. In a vertical bobbin holder, a hollow cylindrical body member having laterally opposed openings, and a bifurcated expansive detent spring in said body member having projecting portions adjacent the ends of the furcations protruding through said openings, each of said projecting portions including a pair of substantially straight portions of substantial length inclined to the axis of said holder in opposite directions and merging together at a substantially common point, certain of said straight portions merging gradually into the body of the spring adjacent the upper edge of the corresponding opening, and certain other of said straight portions terminating in abrupt shoulders adjacent the lower edge of the corresponding opening.

4. In a bobbin holder, a hollow cylindrical body member having laterally opposed openings adjacent the bottom thereof, means for pendulously swiveling the body member from a creel board, and a yielding detent in said body member having laterally extending bowed portions projecting outside said body member through said openings, each of said bowed portions including a pair of substantially straight portions of substantial length inclined to the axis of said holder in opposite directions and merging together at a substantially common point, the body member having means adapted to engage said straight portions and collapse the detent responsive to longitudinal movement of the detent in the body member in either direction, and certain of said straight portions having means which engages the inner surface of said body member for retaining the detent in normal position.

5. In combination with a bobbin having an axial opening therein constricted to form a neck adjacent the upper end thereof, a bobbin holder having a hollow cylindrical body adapted to enter said opening and having diametrically opposed slots adjacent the bottom thereof, and a bifurcated expansive spring detent in said body having laterally extending bowed portions protruding through said slots, each of said bowed portions including a pair of substantially straight portions of substantial length forming an angle, certain of said straight portions having an inclination to the axis of said holder greater than the inclination to the axis of said holder of certain other of said straight portions, said certain of said straight portions arranged to engage the inner edge of said neck with a substantially uniform resistance to removal irrespective of variations in size of said neck, and said certain of said straight portions merging gradually into the body of the spring adjacent the upper edge of the corresponding slot whereby upward pressure on said detent causes said upper edge to initiate the collapse of said detent with a high mechanical advantage.

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