May 27, 1958 A. E. WINSLOW 2,836,376

BOBBIN HANGER

Filed June 27, 1956 2 Sheets-Sheet 1

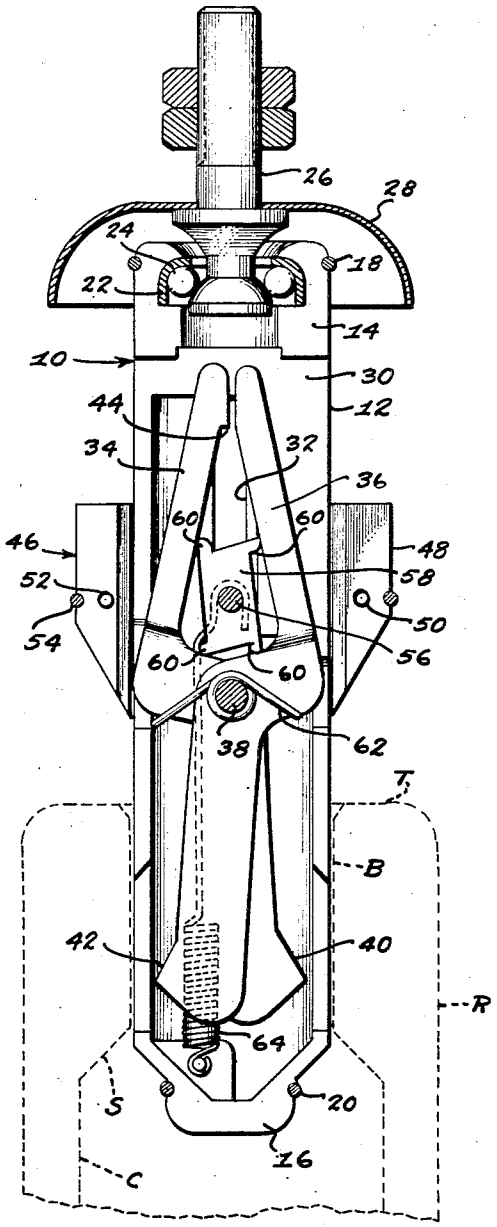


Fig. 1

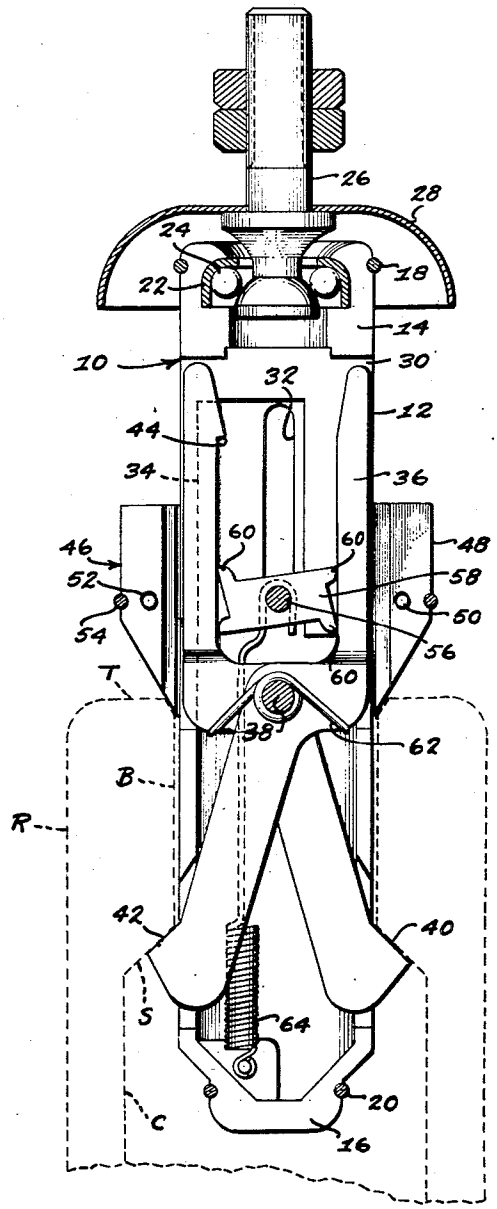


Fig. 2

INVENTOR.
ALBERT E. WINSLOW
BY
Parrott & Richards
ATTORNEYS

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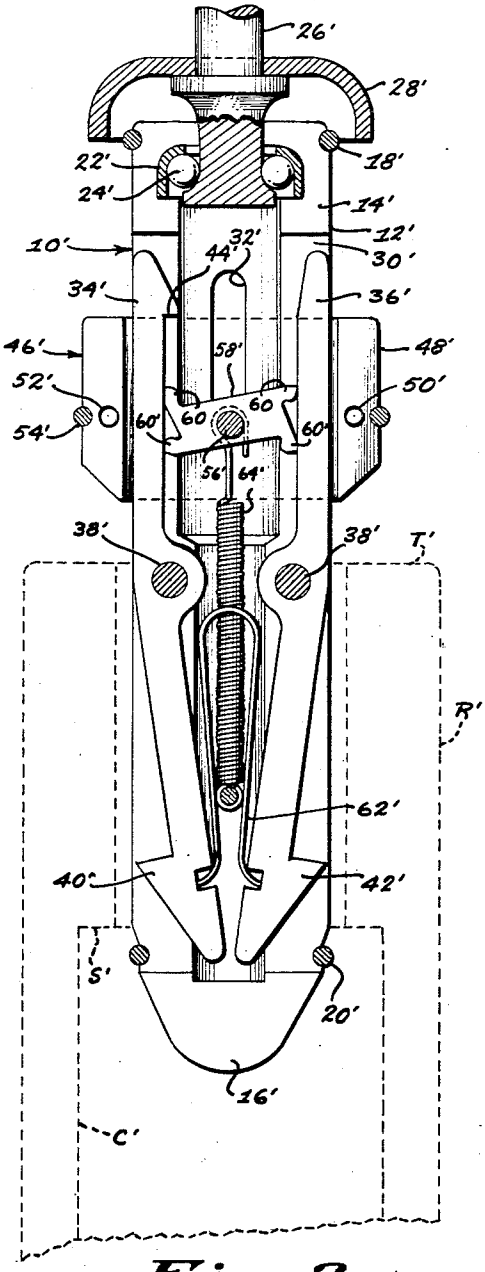


Fig. 3

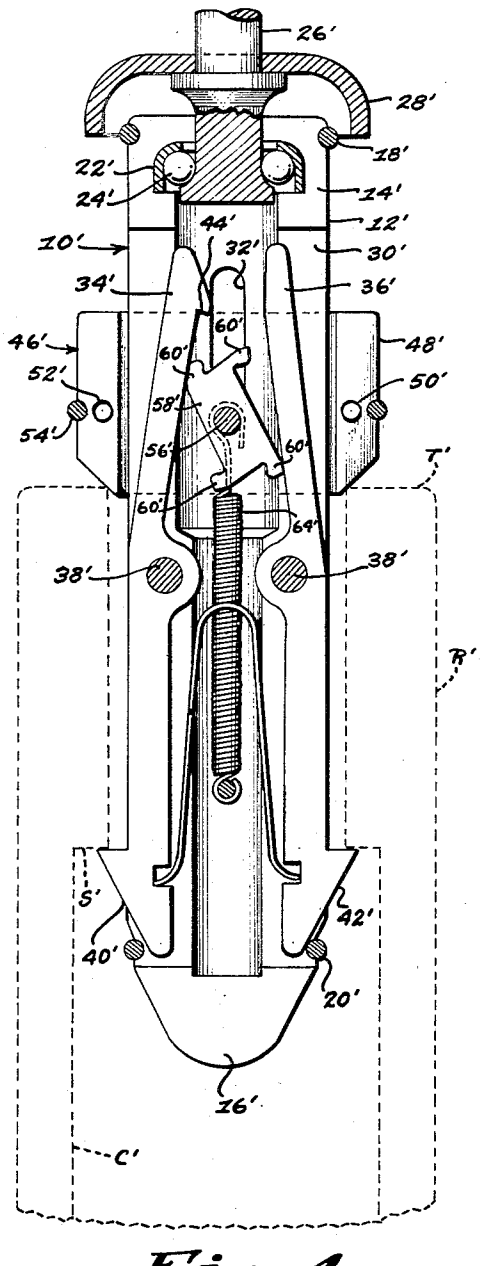


Fig. 4

INVENTOR.
ALBERT E. WINSLOW
BY
Parrott & Richards
ATTORNEYS

United States Patent Office 2,836,376 Patented May 27, 1958

2,836,376

BOBBIN HANGER

Albert E. Winslow, Greenville, S. C., assignor to Standard Screw Company, a corporation of New Jersey

Application June 27, 1956, Serial No. 594,146
8 Claims. (Cl. 242—130.2)

This invention relates to bobbin hangers of the type suitable for use in spinning frame creel structures and arranged for penetrating the tip bore of a roving bobbin or the like and incorporating laterally projectable means for engaging and suspending such a bobbin at the usual counterbore shoulder therein, together with means displaceable by the tip of the bobbin for actuating alternate projection and retraction of the engaging means, so that the bobbins may be readily installed and removed from the creel structure.

According to the present invention, an improved arrangement is provided for the bobbin engaging means, together with a particularly effective and dependable mechanism for operating this means; and the hanger structure as a whole is uniquely arranged for assembly in a simple and advantageous manner.

These and other features of the present invention are described in detail below in connection with the accompanying drawings, in which:

Fig. 1 is a longitudinal section of a bobbin hanger embodying the present invention, with the bobbin engaging means thereof shown retracted;

Fig. 2 is a further longitudinal section corresponding to Fig. 1, but showing the bobbin engaging means projected;

Fig. 3 is a longitudinal section similar to Fig. 1 illustrating a modified embodiment of the present invention; and

Fig. 4 is a longitudinal section similar to Fig. 2 further illustrating the modified Fig. 3 embodiment.

Referring in particular to the drawings, the embodiment of the present invention illustrated in Figs. 1 and 2 comprises, as shown, a composite body member indicated generally by the reference numeral **10** that is formed by assembled component longitudinal halves, as at **12**, and shaped in aggregate cross section for penetrating the tip bore B of a roving bobbin R, as represented in dotted lines.

The component longitudinal halves **12** have mating head and nose portions **14** and **16** arranged for abutment to determine the aggregate cross section of the body member **10** upon assembly by means of snap rings seated in adjacent exterior grooves as shown at **18** and **20**, or by other securing elements. The head portions **14** of the longitudinal halves are further formed with inner transverse grooves at **22** for assembly over a bearing unit **24** having a mounting stud **26** seated therein, the head portions **14** being annular in cross section and being shaped so as to provide an adequate longitudinal bore for receiving the mounting stud **26** freely, and the mounting stud **26** being fitted with a dust cap **28** to shroud the head portions **14** against undue accumulation of lint therein.

Between the head and nose portions **14** and **16**, the longitudinal body member halves **12** have complementary transverse recesses **30** formed therein, with aligned longitudinal slots **32** arranged laterally and centrally with respect to the recesses **30**. At the transverse recesses **30**, a pair of latching arms **34** and **36** are pivotally assembled between the longitudinal halves **12**, the latching arms **34** and **36** extending adjacent opposite sides of the recesses **30** in scissors-fashion with a common pivot axis at **38** intermediate their length so as to allow alternative projection and retraction with respect to the body member **10** of the latching arm ends adjacent the nose portions **16** (compare Figs. 1 and 2).

The ends of the latching arms **34** and **36** adjacent the nose portions **16** are both formed with outwardly directed latching ears **40** and **42** that are shaped for engaging a roving bobbin R at the usual counterbore shoulder S located therein at the juncture of its counterbore C and tip bore B. The other end of one of the latching arms **34** is also formed with an inwardly directed hook portion **44** for a purpose that is explained at length further below.

Exteriorly of the body member **10**, a collar member is arranged, as indicated generally by the reference numeral **46**, for longitudinal displacement. This collar member **46**, like the body member **10**, is formed by component longitudinal halves, as at **48**, each having a projecting lug **50** and mating bore **52** at the assembly faces for longitudinal alignment, and these component halves **48** are assembled about the body member **10** by suitable means, such as a snap ring **54**, to carry an axle pin **56** diametrically of the collar member **10** for rotation about its axis and extending through the longitudinal slots **32** in the body member halves **12**, for following therein any longitudinal displacement of the collar member **46** with respect to the body member **10**.

The axle pin **56** assembled with the collar member **46** in turn carries a cam block **58**, at the transverse recesses **30** in the body member halves **12**, that is formed with major and minor axes proportioned for selective spacing action between the latching arms **34** and **36**, at the pivoted extent thereof reaching toward the head portions **14**, to determine projected and retracted positions for the opposite latching arm ends at which the latching ears **40** and **42** are located. The cam block **58** is rectangular in form and is arranged symmetrically on the axle pin **56** so that upon successive quarter turns it is rendered alternately active at its major and minor axes.

In order to provide for effecting such quarter turn rotation, the cam block **58** is formed with serially related cam ears **60** at each of its corners for engagement successively by the previously mentioned hook portion **44** of the latching arm **34**, and the longitudinal slots **32** in the body member halves **12** are formed to extend toward the head portions **14** for allowing sufficient displacement of the cam block **58**, with the axle pin **56** and collar member **46**, to cause such engagement and rotation. The latching arms **34** and **36** are biased to follow the spacing action of the cam block **58** resulting from such rotation by a torsion spring **62** arranged adjacent their pivot axis **38**, and a tension spring **64** anchored adjacent the nose portions **16** of the body member halves **12** is extended to the axle pin **56** for biasing it, together with the cam block **58** and collar member **46**, toward the ends of the longitudinal slots **32** extending toward the nose portions **16**; the extent of the longitudinal slots **32** in this direction being sufficient to allow a biased disposition of the collar member **46** on the body member **10** at a longitudinal spacing from the latching arm ears **40** and **42** when projected that is less than the extent of a roving bobbin tip bore B to the counterbore shoulder S therein.

As arranged in this manner, and starting with the latching arms **34** and **36** retracted as shown in Fig. 1, the bobbin hanger of the present invention may be operated to engage and suspend a roving bobbin R simply by presenting the bobbin tip T at the assembled nose portions **16** so that the tip bore B is penetrated by the body member **10**, and then pressing the bobbin tip T against the collar member **46** so as to displace it on the body member **10** toward the head portions **14**.

This displacement of the collar member **46** will cause following displacement of the cam block **58**, which will be disposed between the latching arms **34** and **36** with its minor axis active in correspondence with the starting retracted position, and the cam block **58** will cause grad-

ual spreading of the latching arms 34 and 36 toward projected position as it moves with the collar member 46 until the hook portion 44 of the latching arm 34 is reached by the adjacent cam ear 60. Further displacement of the collar member 46 will then result in engagement of the adjacent cam ear 60 by the latching arm hook portion 44 to effect a greater turn rotation of the cam block 58 and thereby dispose the major axis of cam block 58 for spacing action between the latching arms 34 and 36 so as to move them to fully projected position. Upon such projection, the body member 10 will have penetrated the bobbin tip bore B beyond the counterbore shoulder S so that the latching ears 40 and 42 may move outwardly within the counterbore C in position to engage the counterbore shoulder S and suspend the bobbin R when the pressure on it is released to allow return of the collar member 46 under the biasing force thereon from the tension spring 64.

In this connection it should be noted that the longitudinal slots 32 in the body member halves 12 are extended sufficiently, as previously noted above, to allow a clamping action between the biased collar member 46 at the bobbin tip T and the projected latching ears 40 and 42 at the counterbore shoulder S, and that the pivoted extent of the latching arms 34 and 36 between which the cam block 58 is disposed assumes a parallel relation in projected position, so that the cam block 58 may return with the collar member 46 while holding the latching arms 34 and 36 fully projected and allowing secure clamping of the suspended bobbin R, as illustrated in Fig. 2.

To remove the suspended bobbin R from the body member 10 essentially the same operation is employed, pressure on the suspended bobbin R to displace the collar member 46 resulting in a further quarter turn rotation of the cam block 58 to dispose its minor axis again for spacing action between the latching arms 34 and 36 so that they are allowed to shift back to retracted position, under the bias of torsion spring 62, and permit withdrawal of the bobbin R from the body member 10, leaving the bobbin hanger with its operation element in the Fig. 1 relation for subsequent mounting of another bobbin R thereon.

The modified embodiment of the present invention illustrated in Figs. 3 and 4 on the drawings is fully comparable with the embodiment just described, except that in this case the latching arms 34′ and 36′ have a biased arrangement toward projected position at which the minor axis of the cam block 58′ is active, while the major axis of cam block 58′ determines the retracted position, which is just the opposite of the arrangement in the previously described embodiment.

Otherwise, the bobbin hanger structure shown in Figs. 3 and 4 incorporates a composite body member 10′ formed by component longitudinal halves 12′ having head and nose portions 14′ and 16′ arranged for abutment upon assembly by snap ring at 18′ and 20′. The head portions 14′ have transverse grooves 22′ therein for assembled engagement with a bearing unit 24′, and are annular in cross section so as to provide a clearence bore for a mounting stud 26′ on which the bearing unit 24′ is seated, and which carries a lint shroud 28′ adjacent the head portions 14′.

Between the head and nose portions 14′ and 16′, the body member halves 12′ are formed with transverse recesses 30′ and laterally arranged longitudinal slots 32′ in substantially the same manner as the body member halves 12 of the first noted embodiment, but in this case the latching arms 34′ and 36′ are separately mounted at spaced pivot axes 38′ adjacent each side of the transverse recesses 30′. The latching arms 34′ and 36′ are again formed with latching ears 40′ and 42′ at the ends thereof adjacent the nose portions 16′ and the other end of one of the latching arms 34′ is formed with a hook portion 44′ for engaging the cam block 58′, although it may be noted that the latching ears 40′ and 42′ in this case are shown with square latching edges for engaging a square counterbore shoulder S′ rather that than being angled as in Figs. 1 and 2 for engaging a beveled shoulder S, to illustrate the possible use of either form of latching ear as desired or required.

The presently described embodiment also includes a collar member 46′ formed of component halves 48′ having lug and bore portions 50′ and 52′ therein for alignment upon assembly by a snap ring at 54′, and this collar member 46′ rotatably carries an axle pin 56′ for the rectangular cam block 58′ on which corner ears 60′ are formed for operating engagement with the hook portion 44′ of latching arm 34′, with the latching arms 34′ and 36′ biased by a hanger spring 62′ to follow the spacing action of cam block 58′ and the bias on the collar member 46 provided by a tension spring at 64′; all for operation to engage and suspend a roving bobbin R′, by abutment at the tip T′ thereof and latching at the shoulder S′ formed therein between its tip bore B′ and counterbore C′, in the same manner that was described in detail above in connection with the embodiment of Figs. 1 and 2.

It should be noted that in both of the illustrated embodiments of the present invention the structure is such as to allow securing of the assembly by only three snap rings 18, 20 and 54 (or 18′, 20′ and 54′), and that other securing elements, such as stud or machine screws, might be substituted while still preserving the essential simplicity of the assembly arrangement, which results from the manner in which a composite body member 10 (or 10′) and composite collar member 46 (or 46′) are used as the basic structural elements of the assembly.

The present invention has been described in detail above for purposes of illustration only and is not intended to be limited by this description or otherwise except as defined in the appended claims.

I claim:

1. A bobbin hanger comprising supporting means formed for penetrating the tip bore of a roving bobbin, a pair of latching arms pivoted intermediate their length on, and arranged in opposed relation lengthwise of, said supporting means, the ends of both latching arms adjacent the bobbin bore penetrating end of said supporting means being formed with outwardly directed latchin gears for engaging a roving bobbin at the usual counterbore shoulder therein, the other end of one of said latching arms being formed with an inwardly directed hook portion, actuating means including an abutment element arranged exteriorly of said supporting means for abutting the tip end of a roving bobbin upon penetration of the tip bore thereof by said supporting means and an axle pin carrying said abutment means, said supporting means being longitudinally slotted to allow disposition of said axle pin transversely therethrough for sliding movement with said abutment means longitudinally of said supporting means, said actuating means being yieldably biased on said supporting means in opposition to the penetration of a bobbin tip bore by said supporting means and said axle pin having the axis thereof arranged parallel to the pivot axis of said latching arms and being spaced for sliding movement on said supporting means centrally between said pivoted latching arms at the extent thereof between their pivot axis and their other ends at which one is formed with said hook portion, a rectangular cam block carried symmetrically and rotatably by said axle pin in spacing relation between said extent of the pivoted latching arms with major and minor axes proportioned for spacing the pivoted disposition of said latching arms alternatively in projected and retracted relation with respect to said supporting means for respective bobbin engagement and release, said cam block having serially related cam ears formed at each corner thereof for engagement successively by said

latching arm hook portion so as to rotate said cam block for successive spacing action determined alternately by the major and minor axes thereof, said abutment element being spaced for causing said hook portion engagement after penetration of a bobbin tip bore by said supporting means sufficiently for engagement of said bobbin counterbore shoulder by said latching arm ears, and means biasing said latching arms for following the spacing action of said cam block.

2. A bobbin hanger of the type arranged for penetrating the tip bore of a roving bobbin to engage and suspend said bobbin at the usual counterbore shoulder therein, said bobbin hanger incorporating a pair of latching arms pivotally mounted thereon for alternative projection and retraction to engage and release said counterbore shoulder, a cam block rotatably mounted thereon and formed with major and minor axes proportioned for determining the projected and retracted positions of said latching arms, means biasing said latching arms to follow the positioning action of said cam block, and means displaceable by the tip of said bobbin when the tip bore thereof is penetrated by said bobbin hanger for causing rotation of said cam block by successive quarter turns and thereby rendering said cam block active alternately at the major and minor axes thereof.

3. A bobbin hanger comprising a mounting stud arranged for vertical disposition and having a bearing seat formed at its lower end, a bearing unit carried at said seat, a composite body member formed by assembled component longitudinal halves and shaped in cross section for penetrating the tip bore of a roving bobbin, said component halves each being formed with mating head and nose portions for abutment upon assembly and being transversely recessed between said portions, said head portions each being transversely grooved for mounting on said bearing unit upon assembly of said halves, a pair of latching arms pivotally mounted between said halves at the transversely recessed portions thereof for alternative projection from said composite body member and retraction therein, a cam block rotatably mounted between said halves for operating said latching arms and having major and minor axes proportioned for determining the projected and retracted positions of said arms, and means carried on said composite body member for displacement upon penetrating movement of said body member within a roving bobbin tip bore and for thereby causing a quarter turn rotation of said cam block upon each such displacement.

4. A bobbin hanger comprising a composite body member formed by assembled component longitudinal halves and shaped in aggregate cross section for penetrating the tip bore of a roving bobbin, said component body halves being formed with mating head and nose portions for assembly abutment, with mating transverse grooves in said head portions for engaging mounting means upon assembly, with mating transverse recesses extending longitudinally between said head and nose portions and with aligned longitudinal slots arranged laterally and centrally with respect to said recesses, a pair of latching arms pivotally assembled between said longitudinal body halves at the transverse recesses therein, said latching arms extending longitudinally adjacent opposite sides of said recesses and being pivoted intermediate their length for alternative projection and retraction with respect to said body member of ends thereof adjacent the nose portions of said body halves, a collar member formed by assembled component longitudinal halves rotatably carrying an axle pin diametrically thereof, said collar member being disposed about said body member for displacement longitudinally thereof and said axle pin being extended through the aligned longitudinal slots in said body halves for following said displacement therein, a rectangular cam block carried by said axle pin at the transverse recesses in said body halves and formed with major and minor axes proportioned for selective spacing action between said latching arms and at the pivoted extent thereof reaching toward the head portion of said body halves to determine projected and retracted positions of the latching arm ends adjacent said nose portions, said longitudinal slots extending toward said head portions sufficiently for allowing displacement of said cam block, with said axle pin and collar member, longitudinally of said pivoted extent of the latching arms and extending toward said nose portions sufficiently for allowing disposition of said collar member on said body member at a spacing from the projected position of the latching arm ends adjacent said nose portions that is less in extent than the extent of said roving bobbin tip bore to the usual counterbore shoulder therein, means biasing said collar member toward a disposition at said spacing on said body member, means biasing said latching arms for following the spacing action of said cam block, and means on one of said latching arms for engaging and causing a quarter turn rotation of said cam block upon each displacement of said collar member against the bias thereon to the full extent allowed by said longitudinal slots.

5. A bobbin hanger as defined in claim 4 and further characterized in that said latching arms are pivoted on a common axis, with the major axis of said cam block determining the projected position of said latching arms and said latching arm biasing means acting to retract said arms.

6. A bobbin hanger as defined in claim 4 and further characterized in that said latching arms are separately pivoted at spaced axes, with the major axis of said cam block determining the retracted position of said latching arms and said latching arm biasing means acting to project said arms.

7. A bobbin hanger of the type arranged for penetrating the tip bore of a roving bobbin to engage and suspend said bobbin at the usual counterbore shoulder therein, said bobbin hanger incorporating a pair of latching arms pivotally mounted thereon for alternative projection and retraction to engage and release said counterbore shoulder, cam means formed for determining the projected and retracted positioning of said latching arms, biasing means urging said latching arms to follow said cam means, and means displaceable by the tip of said bobbin when the tip bore thereof is penetrated by said bobbin hanger for causing said cam means and biasing means alternately to project and retract said latching arms.

8. A bobbin hanger comprising a composite body member formed by assembled component longitudinal halves and shaped in cross section for penetrating the tip bore of a roving bobbin, said component halves each being formed with mating head and nose portions for abutment upon assembly and being transversely recessed between said portions, said head portions each being transversely grooved for mounting on a depending hanger element upon assembly of said halves, a pair of latching arms pivotally mounted between said halves at the transversely recessed portions thereof for alternative projection from said composite body member and retraction therein, cam means arranged interiorly of said assembled body member halves for determining the projected and retracted positioning of said latching arms, biasing means urging said latching arms to follow said cam means, and means displaceable upon penetrating movement of said body member within a roving bobbin tip bore for causing alternate projection and retraction of said latching arms by said cam means and biasing means.

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