June 23, 1942. F. MONTALTO 2,287,117

WINDING SPINDLE

Filed April 11, 1939

Fig. 1.

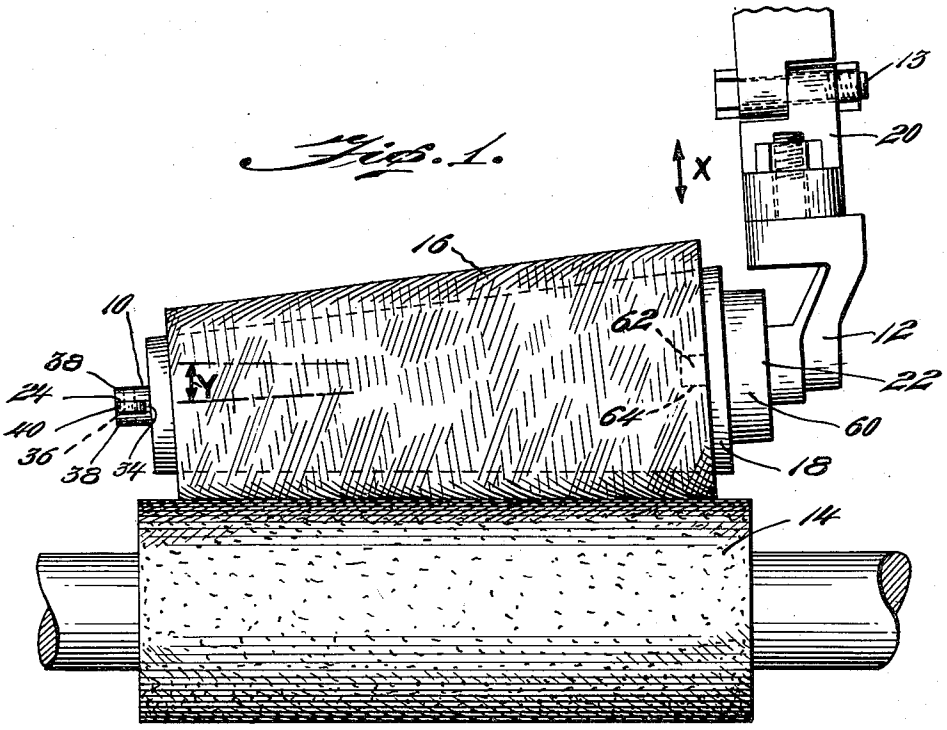


Fig. 2.

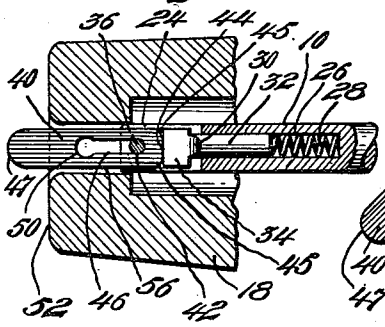


Fig. 3.

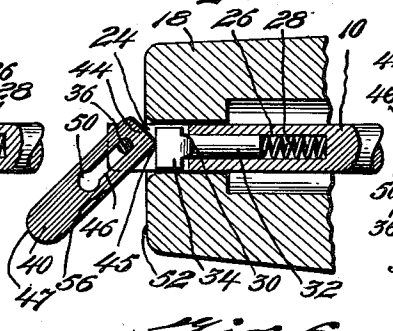


Fig. 4.

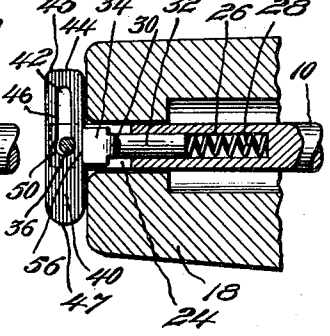


Fig. 6.

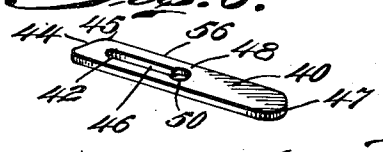
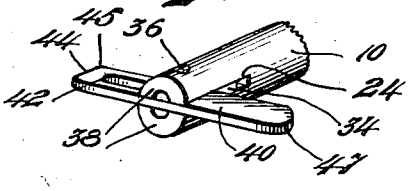


Fig. 5.



Inventor
Frank Montalto
By Thomas A. Jenckes
Attorney

Patented June 23, 1942 2,287,117

UNITED STATES PATENT OFFICE

2,287,117

WINDING SPINDLE

Frank Montalto, Bradford, R. I., assignor of one-third to Michael Vacca, Bradford, R. I.

Application April 11, 1939, Serial No. 267,273

2 Claims. (Cl. 242—130)

My invention relates to improvements in take-up or let-off winding spindles for holding rotatable cops, cones, tubes, cheeses and the like having a hollow winding core, whether it be made of paper, cardboard, Bakelite, wood, or otherwise, adapted to be rotated on the spindle for winding or unwinding thread, yarn or filament, whether such winding takes place on winding machines, twisting machines, spinning machines, or other types of machines, wherein yarn, threads or filaments are wound from or on to holders therefor rotatable on the spindle.

My invention particularly relates to winding spindles on winding machines on which the thread or filament is wound to or from its holder by means of friction against the surface of the wound or unwound package.

A main object of my invention is to provide a positive type of latch for securing the hollow winding core on such a spindle during use movable to a position to permit the removal or insertion of a full or empty core to or from said spindle.

My invention is particularly adapted for use on spindles for worsted winding machines, wherein the type of latch used in the prior art has not been found satisfactory in use, which has permitted the cone to slide axially and come out of engagement with a clutch, which prevents operation of the usual slug brake to permit slugs to become wound on to the package. As my improved latch insures contact between the hollow core and its driving member, against which the slug brake operates, it insures at all times the operation of the slug brake to at all times provide an instant stop on the appearance of a slug, thereby saving time and yarn. In addition, due to the fact that the hollow core is always retained in engagement against its driving member, it prolongs the life of the core.

While my improved spindle is adapted for use in any type of winding or unwinding, it is particularly adapted for use with inspection winding, which is solely for the purpose of determining the character of the yarn or filament wound or unwound.

These and such other objects of my invention as may hereinafter appear will be best understood from a description of the accompanying drawing, which illustrates my invention applied on a spindle of a standard type of Leesonia Universal Winding Co. worsted winding machine.

In the drawing,

Fig. 1 is a front elevation of a spindle equipped with my invention employed for winding a worsted cone and illustrating the adjacent portions of the winding machine.

Figs. 2, 3 and 4 are longitudinal sectional views through the end of a spindle equipped with my invention illustrating the steps in moving the latch from unlatched to latched position on mounting of a core thereon.

Fig. 5 is a perspective view of my improved latch in latched position on the end of a spindle.

Fig. 6 is a perspective view of the latch member itself.

In the drawing, wherein like characters of reference generally indicate like parts throughout, 10 generally indicates a suitable spindle blade on which my invention may be employed. I have shown in Fig. 1 portions of a standard type of Leesonia worsted winding machine manufactured and sold by the Universal Winding Co. The spindle 10 is suitably mounted on an arm 12 pivotable from a position overlying the drive shaft 14 with the package 16 wound thereon frictionally engaging said drive shaft 14, to a forward position at right angles thereto for the purpose of removing and replacing the hollow core 18 thereon. The arm 12 is pivotally mounted on a bracket 20 to pivot on a substantially vertical axis back and forth from unloading to loading positions. The bracket 20 also may be raised and lowered vertically as indicated by the arrow X on the horizontal pivot pin 13 prior to pivoting the bracket, attached spindle and package horizontally from a winding to a loading position. As indicated by the arrow Y, the bracket 20 may also be rotated to a permanent set position to provide a winding surface on the core 18 and hence package 16 wound thereon parallel to the surface 14. Thus if the core comprises a cone core 18, as shown, the entire spindle and bracket is tilted as shown from the horizontal position an amount indicated by the arrow Y and locked in such tilted position. If, however, it be desired to wind a package having a cylindrical core 18, such as a tube, the bracket 20 is then tilted to substantially a vertical position so that the axis of the spindle 10 will be substantially parallel to the surface of the drive roll 14. Thus the size and shape of the hollow core depends on the nature of the package to be wound and the bracket 20 may be suitably adjusted accordingly.

The spindle blade 10 is provided with an annular base 22 for abutment of one end of said hollow winding core 18 thereagainst. The outer end of the spindle 10 is provided with the diametrically extending slot 24 and with a central bore 26 extending a distance axially of said spindle

10 interior of said diametric slot 24. A helical spring 28 may be contained within said bore 26 and a keeper member 30 is normally employed having a cylindrical stem 32 normally contained within said bore 26 with the inner end thereof abutting the outer end of said spring 28 and a flat T-head 34 extending across said slot. In the prior art said slot has also been provided with a pivot pin 36 extending diametrically across said slot and spindle and embedded in the portions 38 of said spindle exterior of said slot 24.

In the prior art, the latch member 40 has had a hole 42 in the outer end thereof and has comprised a latch of a length only substantially the radius of the tubular core 18 employed. Employing my invention, I provide a flat oblong latch member 40 of a greater length, substantially the diameter of said core and of a width to lie within said slot 24 and with a substantially flat end 44. I provide said latch member 40 with a slot 46 normally adapted to contain said pin 36 extending from substantially the center thereof as at 48 to nearly said flat end 44 thereof, provided with an enlarged rest portion 50 at the center end thereof, said enlarged portion 50 forming a rest portion for said latch to prevent it from sliding radially in use. It is thus obvious that the latch member 40 may be pivoted back and forth from an axial position, as shown in Fig. 2, with the substantially flat end 44 thereof abutting said resilient keeper member 34, to a radial position with said pin 36 in the hole end 42 of said slot, said pin 36 remaining in said end 42 of said slot during such pivotal movement and I have shown in Fig. 3 said latch member 40 in the act of being so pivoted. At the end of said pivotal movement, it is obvious that said latch member 40 will project radially outwardly from the center of said spindle overlying the outer end 52 of the hollow core 18 employed. It is then obvious that said latch member 40 may be moved back and forth radially to the diametric position shown in Fig. 4 with said pin 36 centrally thereof, namely, in the center rest portion 50 of said slot 46 with each respective end thereof, namely, the flat end 44 and the end 47 opposite the said flat end radially abutting the end 52 of said core and thereby retaining said core 18 on said spindle. It is obvious that in any position of the latch member 40, the spring 28 will urge said keeper member 30 to abut either the bottom side wall 56 of said latch as shown in Fig. 4, or the flat end wall 44 thereof shown in Fig. 2 and it is apparent that as said latch member is radially moved from the radial position suggested in Fig. 3 to the diametric position shown in Fig. 4 that the flat surface of said keeper member will continuously abut said bottom side wall 56 of said latch. It is apparent that if desired, the keeper member 30 may be dispensed with and a suitable type of spring or other resilient means may directly abut the flat end 44 of said latch member when employed, or the bottom of said latch when in such diametric or radial positions. In the embodiment shown, the flat surface 44 extends entirely across its respective end to provide the corner 45 to provide a dead center for pivotal movement of said latch 40 as suggested in Fig. 3 and it is apparent that after it has passed said dead center, whether on movement to an axial or radial position that the resilient keeper means will then function to urge it to such position.

The base 22 may be provided with the annular surface 60 against which the slug brake may operate and may be provided with suitable means, such as a driving tooth 62 projecting axially outwardly therefrom adapted to fit in a suitable notch 64 in the inner end of said hollow core 18 or cone as shown to positively connect the braking surface 60 with the package. Employing the type of radial latch hitherto suggested as the type of radial latch employed in the prior art prior to my invention, it is obvious that with the force of the rotating package, the core 18 might tend to move axially and thus pivot the radial latch to the axial position shown in Fig. 2, removing the tooth 62 out of its notch 64 or other means employed to connect the braking surface 60 with the package so that the brake would not positively function to stop rotation of the hollow core 18 and hence the package being wound thereon as a slug passes through the machine. Employing my improved latch, however, as the ends thereof continuously abut diametrically opposite surfaces of the end of the core, it is obvious that as they continuously keep the core in axial contact with the base 20 and tooth 62 within the notch 64, that it is impossible for the core 18 to slide axially and thus prevent the slug brake from positively stopping rotation of the core 18.

In operation the bracket 12 may be pivoted upwardly as it is swung 90° forwardly horizontally to a loading or unloading position, the latch member being then in the axial position shown in Fig. 2. The hollow core, as shown in Fig. 2, may be loaded on said spindle and as the core is inserted on the spindle as shown in Fig. 3, the latch member may be first pivoted to the radial position suggested in Fig. 3 and then moved diametrically to the diametric position shown in Fig. 4 to positively lock the core to the spindle 16 and positively insure operation of the slug brake 60 to stop rotation of the hollow core 18 and package 16 being wound thereon on the passage of a slug through the machine. To remove the core with a package 16 wound thereon, it is obvious that it is merely necessary to slide the latch 40 from a diametric position shown in Fig. 4 to the radial position shown in Fig. 3 and pivot it to the axial position shown in Fig. 2 when the core may be removed from the spindle in the manner indicated in Fig. 2.

It is apparent that I have provided a novel type of winding spindle with the advantages explained above.

It is understood that my invention is not limited to the specific embodiment shown and that various deviations may be made therefrom without departing from the spirit and scope of the appended claims.

What I claim is:

1. In a take-up or let-off winding spindle for a yarn package having a hollow winding core, a spindle blade having an annular base for abutment of one end of said hollow winding core, said spindle blade having a diametrically slotted outer end having a bore projecting axially of said end for a distance from the inner end of said diametric slot, a helical spring contained within said bore, a keeper member having a cylindrical stem contained within said bore with the inner end thereof abutting said spring and a head having a flat outer surface extending perpendicular to said stem within said diametric slot, a pivot pin extending diametrically across said diametric slot and a flat oblong latch member having parallel edges and a flat end surface

substantially perpendicular to said edges and a slot through said latch member containing said pivot pin and extending from substantially the center of said latch member toward said flat perpendicular end of said latch member and with an enlarged rest portion at the center end of said slot in said latch member whereby said latch member may be pivoted from an axial position aligned with said spindle for loading or unloading a hollow core on said spindle with the substantially flat perpendicular end surface of said latch member abutting the flat outer surface of said keeper member, to a radial position with said pin in the outer end of said slot in said latch member and said latch member may be moved radially from said radial position to a diametric position with said pin in the enlarged rest portion of said slot with each end of said latch member abutting the outer end of said core to retain said core on said spindle with the outer flat surface of said keeper member abutting the then bottom edge surface of said latch-member in said radial and diametric positions.

2. In a take-up or let-off winding spindle for a yarn package having a hollow winding core, a spindle blade having an annular base for abutment of one end of said hollow winding core, said spindle blade having a diametrically slotted outer end, resilient keeper means having a flat outer surface projecting outwardly from the inner end of said diametric slot, a pivot pin extending diametrically across said diametric slot and a flat oblong latch member having parallel edges and a flat end surface substantially perpendicular to said edges and a slot through said latch member containing said pin and extending from substantially the center of said latch member towards said flat perpendicular end surface of said latch member and with an enlarged rest portion at the center end of said slot in said latch member, whereby said latch member may be pivoted from an axial position aligned with said spindle for loading or unloading a hollow core on said spindle with the substantially flat perpendicular end surface of said latch member abutting the flat outer surface of said resilient keeper means to a radial position with said pin in the outer end of said slot in said latch member and said latch member may be moved radially from said radial position to a diametric position with said pin in the center rest portion of said slot with each end of said latch member abutting the outer end of said core to retain said core on said spindle with the flat outer surface of said keeper means abutting the then bottom edge surface of said latch member in said radial and diametric positions.

FRANK MONTALTO.