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SUPPLY HOLDER

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2 Sheets-Sheet 1

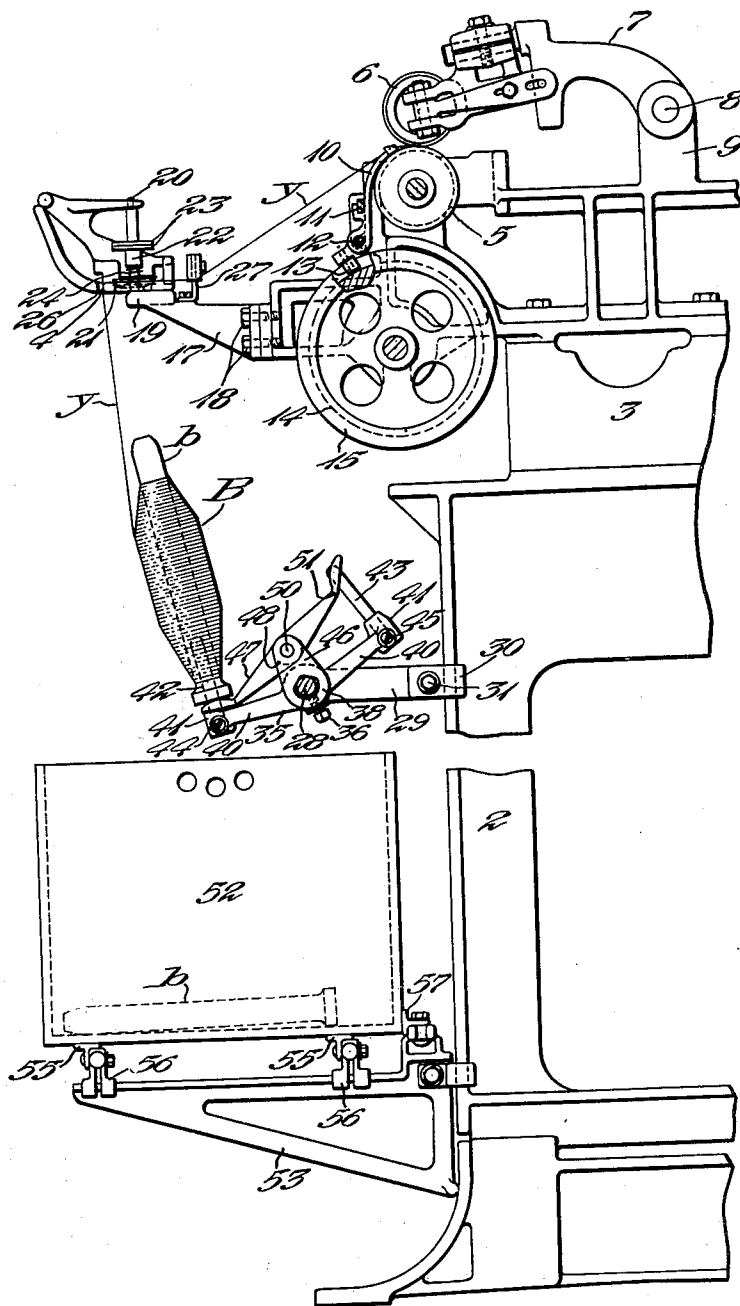


Fig. 1.

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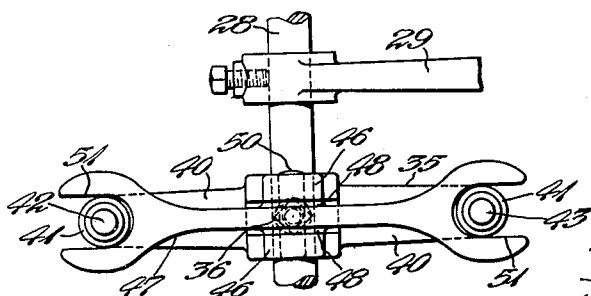
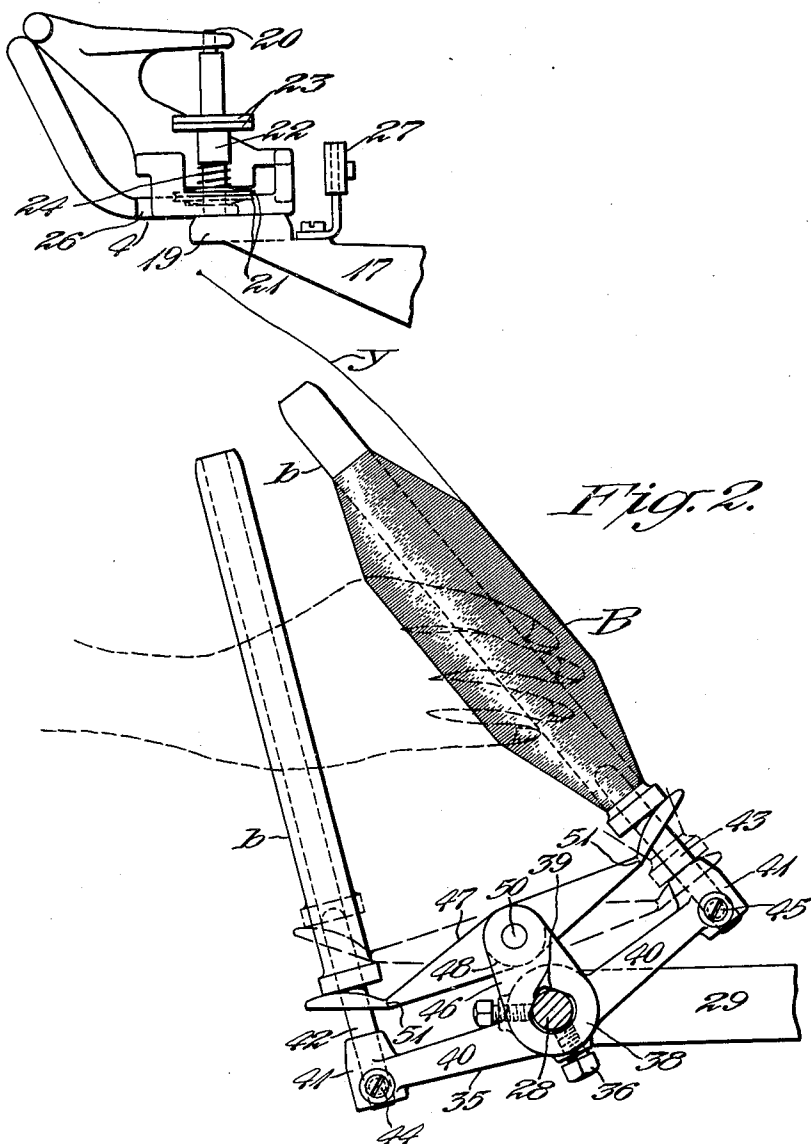
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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SUPPLY-HOLDER

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11 Claims. (Cl. 242—130)

This invention relates to supply-holders for holding cops, bobbins and other forms of packages of yarn, thread and the like to deliver the material to winding machines or other textile apparatus.

In the following specification and claims the term "bobbin" is to be interpreted generically as applying to any preferred form of supply-package, and the term "yarn" is employed in a broad sense to designate all varieties of strand material.

One object of the invention is to provide a supply-holder which may be operated more conveniently and expeditiously to doff a spent bobbin and apply a fresh one to delivering position.

Another object of the invention is to provide a device of the type specified wherefrom the spent or exhausted bobbin is automatically doffed by the act of applying a fresh bobbin to position.

Another object of the invention is to provide a device of the type specified whereon the bobbin may be placed in delivering position by a simple movement of the hand requiring minimum effort on the part of the operator, and whereby the spent bobbin is simultaneously doffed so as to economize in the time required for performing both operations.

Another object of the invention is to provide a device of the type specified from which the spent bobbin or yarn-carrier is doffed in such manner as to cast it into a suitable receptacle or bobbin-box.

Further objects of the improvement are set forth in the following specification which describes a preferred embodiment of the invention, by way of example, as illustrated by the accompanying drawings. In the drawings:

Fig. 1 is a view showing a conventional type of winding machine in end elevation and illustrating the present improved supply-holder as applied to use therewith;

Fig. 2 is an enlarged view showing the supply-holder in its relation to the tension-device of the winding machine and illustrating the manner in which a bobbin is placed on the spindle of the holder and caused to effect the ejection or doffing of the spent bobbin; and

Fig. 3 is a detailed plan view of the supply-holder.

In the present era of high speed operation of winding machines and other textile apparatus due consideration must be given to the manual operations necessary to supply the machine with yarn, thread or the like; and the time required for doffing spent bobbins and applying fresh ones in place thereof must be reduced to the minimum

in order to shorten the intervals of unproductiveness of the machine. For this purpose the present invention consists in general of a supply-holder provided with two or more supply spindles on which bobbins, cops or other yarn packages may be held to successively deliver the material to the winding or other machine, and having means embodied therein to effect the doffing of the spent bobbin when a fresh bobbin is placed in position thereon.

Referring to Fig. 1 of the drawings, 2 designates one of the legs or standards supporting a winding machine of gang or multiple unit type, and 3 indicates the bed or frame on which the winding units are mounted. As herein shown the winding mechanism comprises a drum or drive-roll 5 and a rotatable cop-holder or yarn-receiver 6 which is held in surface contact with the drive-roll to cause it to be driven therefrom. The cop-holder 6 is carried at the end of a swinging arm, indicated generally at 7, which is pivoted at 8 to an upright 9 on the machine frame. As the drive-roll or drum 5 rotates the package to wind the yarn thereon the growth in diameter of the mass causes the cop-holder 6 to rise away from the drum as it swings on the pivoted arm 7. In the present drawings a reciprocating thread-guide 10 is illustrated as providing means for traversing the yarn longitudinally of the cop-holder 6, the guide sliding on tracks or ways 11 and 12 and carrying a roller or bowl 13 which engages a helical groove 14 in a rotating cam 15. The construction of the winding mechanism as above described is well known to those versed in the present art and is therefore not herein illustrated in detail.

It is usual in winding machines to apply tension to the yarn as it feeds to the cop or package being wound, and in Fig. 1 there is shown a tension-device of the disk type. The tension-device is mounted on a bracket 17 bolted to the front of the frame of the winding machine at 18 and having a horizontal shelf or rest 19, from which rises a vertical spindle 20. A pair of tension-disks 21 are arranged in opposite relationship on the spindle 20 with a weight-holder 22 thereabove carrying a suitable number of weights 23, the holder being adapted to slide on the spindle to apply pressure to maintain the tension-disks bearing against the strand of yarn drawing therebetween. In the form of construction herein illustrated the weight-holder 22 bears against a spring 24 to cause the latter to act yieldingly against the upper tension-disk to press it down against the lower disk. The strand of yarn *y*

leads up through an opening or guide-eye 26 at one side of the shelf 19 and draws across the top of the shelf to lead between the two tension-disks 21. From the tension-device the strand *y* draws through a suitable slub-catcher 27, as usually provided, and thence leads up to the thread-guide 10 to be fed therefrom and traversed on the cop or package being wound.

In winding yarn and other strand material from cops, bobbins or similar types of headless yarn-packages the strand is generally drawn off over the end of the package and the supplies are usually arranged below the winding units with their axes in line with the point to which the yarn delivers to feed through the tension-device. In the present embodiment of the invention the supply-holder is supported on a horizontal rod 28 which may extend the whole length of the machine to provide a mounting for a plurality of the devices, one for each winding unit. The longitudinal rod 28 may be mounted at the ends of brackets or arms 29 which project from the sides of the legs 2 carrying the winding machine frame. As shown in Fig. 1, the bracket 29 is attached to the web of the leg 2 by means of a clamp 30 held in place by a bolt 31, this arrangement being in accordance with the usual custom.

The present improved supply-holder is of extremely simple design and construction, comprising as it does practically only two elements. Referring to Figs. 2 and 3 of the drawings, on the rod 28 is mounted a two-armed bracket or support 35, secured fixedly in place by a set-screw 36 extending radially through its central hub 38. The bore of the hub 38 is preferably formed with flattened sides 39 whereby the set-screw 36 will have a binding action to prevent the bracket from turning on the rod 28. At the extremities of the arms 40 of the bracket 35 are hubs 41 bored to receive spindles 42 and 43. The spindles 42 and 43 are secured fixedly in place in the hubs 41 by means of set-screws 44 and 45 and are adapted in size to the bore of the bobbin-tubes or other yarn-receivers which form the central cores or supports of the bobbins B. For example, in the present drawings the spindles 42 and 43 are shown as adapted for insertion into the bores of fiber or wooden bobbin-tubes *b*. The spindles 42 and 43 are set at an angle or inclined toward each other with their axes intersecting at the point to which the yarn delivers. In the present showing the bracket or support 35 is located in such position and adjusted about the rod 28 to bring the spindles 42 and 43 in line with the point 4 where the yarn is guided at the tension-device; or, in other words, the axes of the spindles intersect at this point. It will thus be seen that a bobbin may be placed on either spindle 42 or 43 and the strand *y* drawn off over its end to lead directly to the point where it delivers to the tension-device.

Projecting upwardly from the hub 38 of the bracket 35 are two spaced ears 46, see Fig. 3, between which is pivoted a rockable lever 47. The lever 47 has bosses 48 on its sides bored to receive a pin 50 driven through the two opposite holes in the ears 46. The opposite extremities of the lever 47 are forked at 51 with the sides of the forks straddling the spindles 42 and 43, the openings of the forks being of sufficient width to adapt them to swing down across the tapered ends of the hubs 41 in which the spindles are held. The forked ends of the lever 47 are inclined upwardly and rounded on their upper sides

to provide convex faces which are adapted to be engaged by the ends of the cop-tubes or wooden bobbins *b* as the latter are pushed down on the spindles 42 and 43. The location of the lever 47 is such that when a bobbin is placed on one of the spindles it will rock the end of the lever with which it engages downwardly to swing the other end of the lever upwardly along the opposite spindle in the manner as illustrated in Fig. 1 of the drawings. The method of operation of the complete device is as follows:

To prepare the machine for winding a bobbin or other supply package, represented at B in Fig. 1, is placed on either of the supply-spindles 42 or 43. Assuming that the bobbin B is placed on the forward spindle 42, as the base end of the bobbin-tube or yarn-receiver *b* is slid down on the spindle it engages against the forked end of the lever 47 and rocks the latter to tilt its opposite end upwardly as before explained. The strand of yarn *y* is drawn off from the bobbin B, carried up through the guide-eye 26, thence led between the tension-disks 21, through the slub-catcher 27 and threaded through the thread-guide 10. The end of the strand is fastened to the cop-holder 6 and the latter placed in contact with the drive-roll 5 whereby it will be rotated to wind the yarn thereon to build the cop, cone or package which constitutes the product of the machine. When the yarn in the bobbin B or other form of supply is exhausted the operation of the machine is arrested, and usually automatic stopping-means are provided for this purpose, such means being common to practically all types of winding machines and therefore not herein illustrated.

When the operator observes that any one of the winding units has ceased to operate through failure of the yarn-supply a fresh bobbin is provided and placed in delivering position in the manner as next explained. After the yarn is exhausted from the first bobbin B, shown in Fig. 1, the operator takes a fresh bobbin and simply places it on the opposite spindle 43. As the bobbin is pushed down onto the spindle 43, in the manner as illustrated in Fig. 2, its end engages against the forked extremity 51 of the lever 47 and rocks the opposite end of the lever upwardly. The bobbin B is placed on the spindle with a quick action and this causes a sharp upward motion of the opposite end of the lever 47 whereby the spent bobbin on the spindle 42 is kicked off or ejected from this spindle.

The action of the supply-holder is the same in either case, whether the fresh bobbin is placed on the forward spindle 42 or the rearward spindle 43. That is to say, the spent bobbin will be ejected simultaneously with the placing of a fresh bobbin on the naked spindle and in this way no time is lost in doffing the empty bobbin, so that the operation of resupplying the machine is greatly facilitated and expedited.

A suitable bobbin-box 52 may be provided at the front of the machine beneath the row of supply-holders, Fig. 1 illustrating the box as supported from horizontal brackets 53 projecting from the legs 2. In most cases a plurality of such boxes are employed for the sake of convenience in removing them with their contents and, as herein shown, the boxes rest on a pair of parallel rails 55 extending horizontally of the machine and supported by clamps 56 carried on the arms or brackets 53. Stops 57 are fixed to the brackets 53 to locate the boxes 52 in proper position on their horizontal supporting rails 55.

When the spent bobbins *b* are ejected from the supply-holder they drop down into the bobbin-boxes 52 and as the latter are filled they may be removed and emptied by the bobbin-boy or other attendant.

It will be observed from the foregoing that the present improved device is of the utmost simplicity in construction, with only two main elements and a single operating part. The means for doffing the spent bobbins comprises a rockable element which is operated automatically without the employment of springs, weights or other energizing means and, therefore, the whole device is proof against deterioration in use, derangement or getting out of order.

While the invention is herein described and illustrated as embodied in a preferred form of construction and applied to a certain type of machine, various modifications may be made in the structure and arrangement of the parts of the device and in its method of application without departing from the spirit or scope of the invention as expressed in the appended claims. Therefore, without limiting myself in this respect, I claim:

1. In a supply-holder, the combination of means for supporting a plurality of supplies of strand material, and a movable element adapted to be operated by the placing of one supply on the holder to eject another spent supply therefrom.

2. In a device of the type specified, the combination of a plurality of spindles for holding bobbins, and a rockable member adapted to be engaged by a bobbin as it is placed on one of the spindles to rock said member to eject a spent supply from another spindle.

3. In a device of the type specified, the combination of a plurality of spindles arranged with their axes inclined toward a point to which the yarn is to be delivered, and a lever pivoted between the spindles with its ends in position to be engaged by a bobbin placed on any one of the spindles to cause its opposite end to be moved to eject a spent bobbin from an opposite spindle.

4. In a device of the type specified, the combination of a plurality of spindles, and a lever rockable on an axis intermediate said spindles and having forked ends straddling said spindles whereby when a bobbin is placed on one spindle it will engage one of the forked ends of the lever to rock the latter to cause its opposite forked

end to force the spent bobbin off from the opposite spindle.

5. In a device of the type specified, the combination of a bracket, spindles supported on said bracket, and a lever pivoted on said bracket with its extremities extending across the spindles to adapt one end of the lever to be engaged by a bobbin placed on one spindle to cause its opposite end to be rocked to eject a spent bobbin from another spindle.

6. In a device of the type specified, the combination of a bracket having opposite arms, spindles mounted at the ends of said arms, and a lever pivoted on an axis substantially equidistant between the spindles and formed with forked ends straddling the spindles, said lever adapted to be engaged by a bobbin placed on one of the spindles to cause its opposite end to be rocked to remove a spent bobbin from the other spindle.

7. In a device of the type specified, the combination of a bracket having a hub with arms extending therefrom in opposite directions and spaced ears projecting thereabove, spindles supported at the ends of the arms, and a lever pivoted between the ears on the hub and projecting outwardly to extend across the opposite spindles to adapt it to be engaged by a bobbin placed on one of the spindles to operate said lever to remove a spent bobbin from the other spindle.

8. In a supply-holder, the combination of a plurality of spindles for supporting bobbins or the like, and means movable under the impact of a bobbin placed upon one spindle to eject a spent bobbin from another spindle.

9. In a supply-holder, the combination of a plurality of spindles for supporting bobbins or the like, and means adapted to be struck by a bobbin as the latter is placed on one spindle to move said means to eject a spent bobbin from another spindle.

10. In a supply-holder, the combination of a plurality of spindles for holding bobbins and the like, and means movable longitudinally of the spindles and adapted to be engaged by a bobbin placed on one spindle to actuate said means to eject a bobbin from another spindle.

11. In combination, a plurality of stationary spindles for supporting bobbins or the like and means actuated by placing a bobbin on one spindle to eject a bobbin from another spindle.

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