Feb. 11, 1941. W. J. ELVIN ET AL 2,231,837

THREAD WINDING MECHANISM

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Fig. 1.

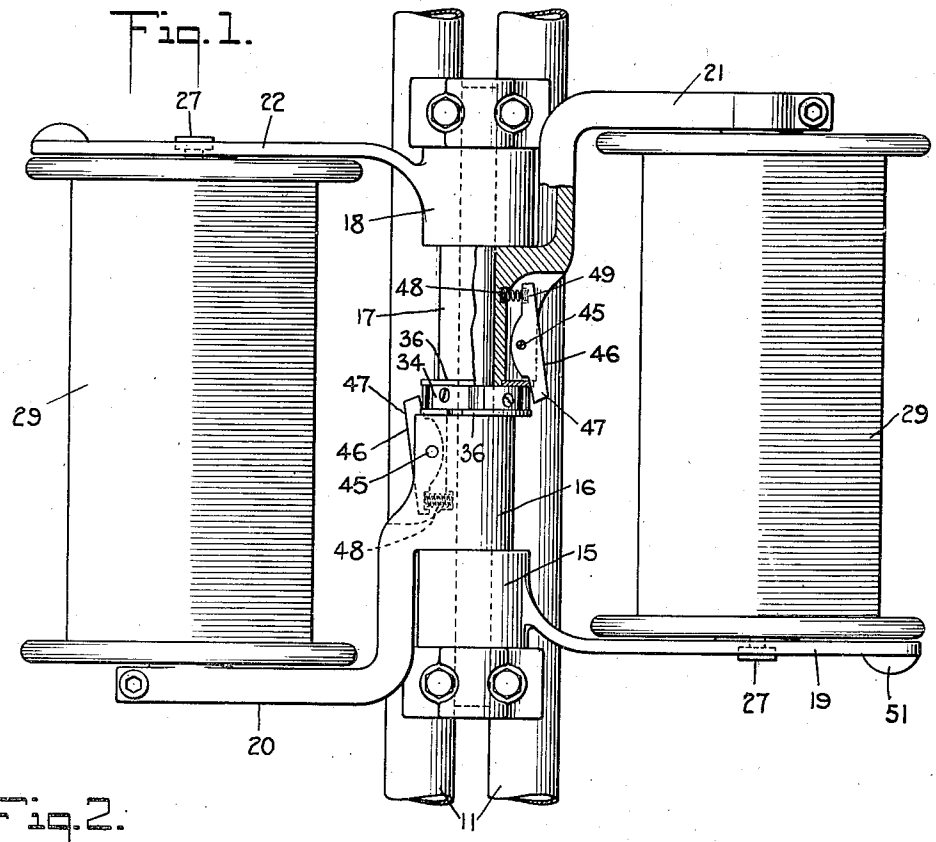
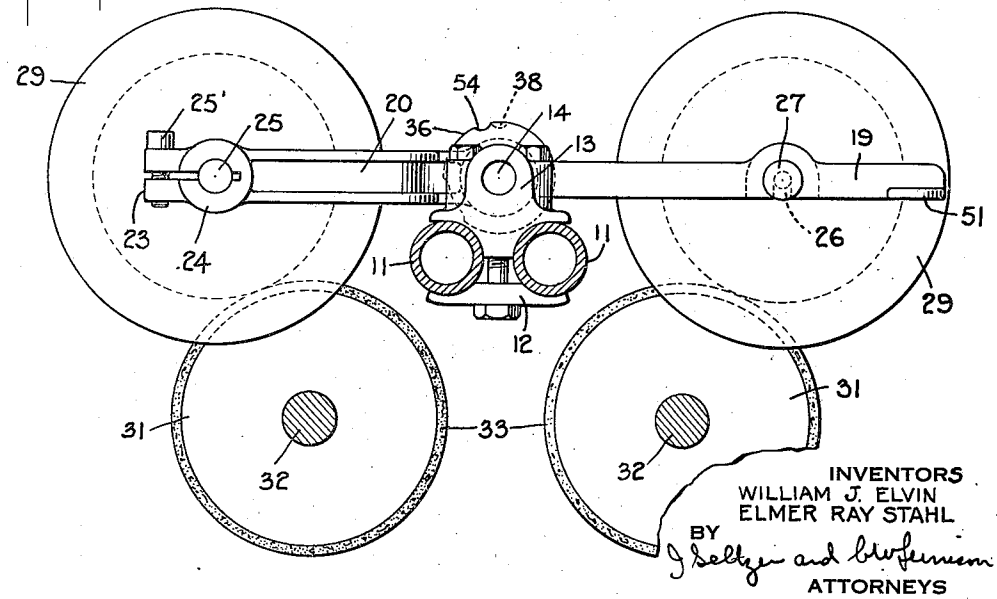


Fig. 2.



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Fig. 3.

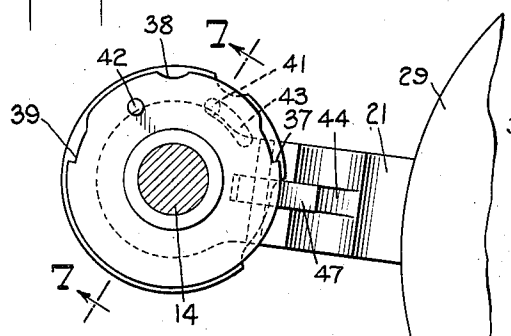


Fig. 4.

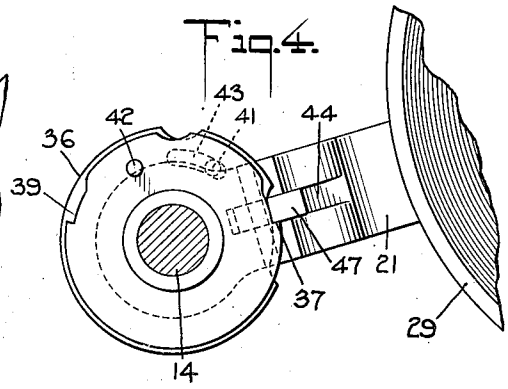


Fig. 5.

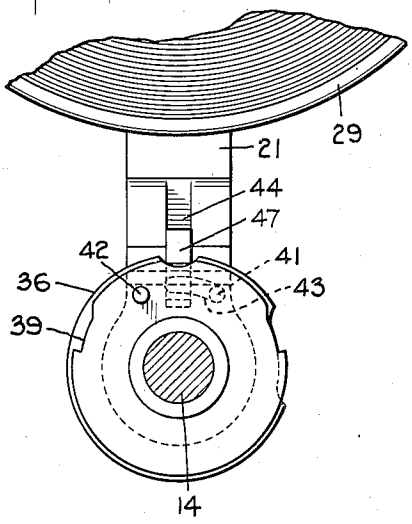


Fig. 6.

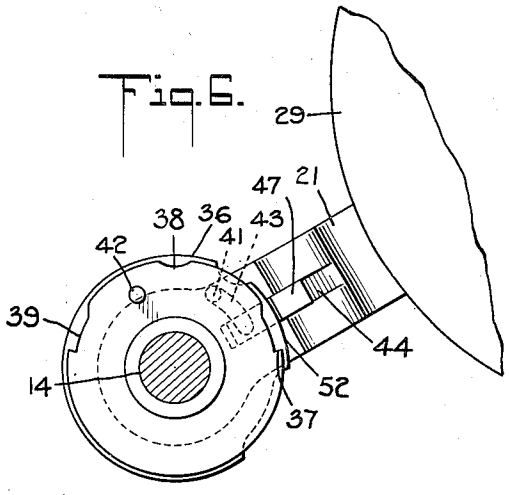


Fig. 8.

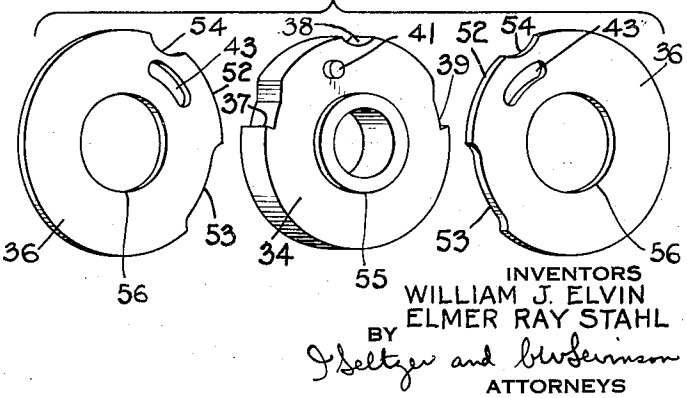
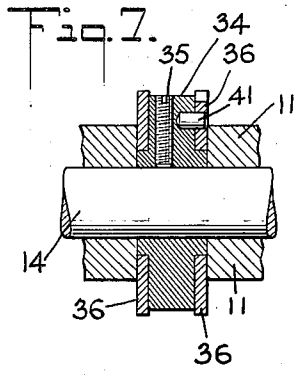


Fig. 7.



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UNITED STATES PATENT OFFICE

2,231,837

THREAD WINDING MECHANISM

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Application February 21, 1939, Serial No. 257,624

5 Claims. (Cl. 242—18)

This invention relates to thread winding mechanisms, and relates more particularly to take-up devices for winding thread on bobbins or like packages in upward twisting machines.

A take-up device, as heretofore commonly employed in upward twisting machines, comprising a bobbin driven by frictional contact with a driving drum, the bobbin being positioned above the drum by a spindle which passes through the bobbin and which is provided with fiber tips resting in vertical guides, so that the weight of the spindle and the bobbin keeps the bobbin braced on to the driving drum.

This device has the disadvantages that the fiber tips at the ends of the spindle wear eccentric in a short space of time or break away entirely from the threaded ends of the spindles especially when heavier packages of thread, i. e., 2 pound packages, are being wound, resulting in high maintenance cost. Moreover, with the large number of winding units usually employed and serviced by a single operative, it is almost impossible to replace damaged spindles and maintain continuous operation. The eccentric tips on the spindles caused an excessive amount of damaged thread due to the bobbin bouncing on the winding drum.

It is an object of this invention to provide a take-up device for winding thread on to a package, which device is free from the above and other disadvantages and which is simple in construction, economical in operation and inexpensive in cost.

Another object of this invention is the provision of improved means for supporting the take-up bobbin while in contact with the winding drum during the winding of the thread on to the bobbin.

A further object of this invention is to provide means for holding the bobbin out of contact with the winding drum.

Other objects of this invention, together with certain details of construction and combinations of parts, will appear from the following description and claims.

In the drawings wherein the preferred embodiment of this invention is shown,

Figure 1 is a plan view, partly in section, of the improved bobbin holder,

Figure 2 is an end elevation of the bobbin holder of this invention showing the bobbins in position on the winding drums,

Figures 3, 4, 5 and 6 are detail views, on a slightly enlarged scale, showing various positions of the bobbin in relation to the spacer collar and washers,

Figure 7 is a cross-sectional view taken on line 7—7 of Figure 3, showing the mounting of the collar and washers, and

Figure 8 is a detail view showing the washer and collar assembly.

Like reference numerals indicate like parts throughout the several views of the drawings.

Referring to Figures 1 and 2 of the drawings, reference numeral 11 represents the fixed horizontal cross bars of an upward twisting machine. To the cross bars 11 are clamped, as shown at 12, brackets 13 in which is supported a shaft 14 on which are rotatably mounted four collars 15, 16, 17 and 18. Integral with each of the four collars is an arm indicated by reference numerals 19, 20, 21 and 22, respectively. The arms 19 and 21 form a bracket extending from one side of the winding machine, while arms 20 and 22 form a similar bracket extending from the opposite side of the machine.

The free ends of arms 20 and 21 are bifurcated, as is shown at 23, and form a bearing member 24 adapted to receive the tip of a spindle 25. Bolt 25' extending through the bifurcation holds the spindle against rotation. The arms 19 and 22 are each provided with a slot 26 adapted to fit over a reduced portion of an extension 27 integral with the free end of spindles 25 so as to lock the bobbin such as is shown at 29 in Figures 1 and 2 in operative, or running, position.

In accordance with this invention means are provided for holding the brackets in such a position that the bobbin carried thereby may be held out of contact with the driving rolls or friction drums 31 which are mounted on and rotated by shafts 32 and which are preferably cork covered as shown at 33 in Figure 2. To this end, there is fixed on shaft 14, between collars 16 and 17, a spacer collar or catch 34. Set screws 35 hold the spacer collar 34 in position on shaft 14. Washers or masking members 36, the function of which will hereinafter be explained, are positioned on a shaft 14, one on each side of said spacer collar. The spacer collar is provided with grooves 37, 38 and 39 and pins 41 and 42, which pins cooperate with slot 43 in each of washers 36 and govern the extent of movement of said washers.

Each of said arms 20 and 21 are milled out adjacent their collars 16 and 17, respectively, and in each of these milled sections 44 is pivotally attached as by means of a pin 45 a lever generally indicated by reference numeral 46. One end 47 of lever 46 is reduced in size and is adapted to be forced by means of an expansible spring 48, mounted at the other end 49 of the lever, into contact with spacer collar 34 as will hereinafter be described more fully in connection with the operation of our device.

The operation of the device will now be described in connection with one bobbin, it being understood that the bobbin-carrying brackets on one side of the machine operate in the same

manner as those on the other side. Referring to Figure 3 of the drawings, the relation of spacer collar 34, washer 36, bracket elements and bobbin is shown as when the bobbin is in contact with the driving roll. When the operative finds it desirable to disengage the full or partly full bobbin from contact with the cork covered driving roll 31 and does not at that moment wish to remove the bobbin from the bracket holding the same he moves the bracket in an upward direction until the end 47 of spring loaded lever 46 falls into slot 37. At this point the relationship between spacer collar 34 and washer 36 is as shown in Figure 4. To remove the bobbin from the bracket the bracket is lifted until lever end 47 falls into slot 38 as shown in Figure 5. The construction and arrangement of our device is such that the bracket can be held in this position without any additional support. It is to be noted that since there is only one slot 38 in the spacer collar the bobbins on either side of the device can not be removed simultaneously although they can be removed simultaneously from the driving roll 31 and held out of contact therewith by means of slots 37 and 39. When the bobbin is to be removed from the bracket, when said bracket is in position in slot 38, the arm 19 is disengaged from the extension 27 of spindle 25, the disengagement being facilitated by a finger piece 51 fixed to the free end of arm 19. The bobbin to be removed is then slipped off the spindle 25 and an empty bobbin is slipped on in place thereof. The arm 19 is then locked in position on spindle extension 27.

When lowering the bracket containing the fresh bobbin into position from slot 38 the washer 36 which is slightly larger in diameter than the spacer collar, say 1/32" larger, is moved, due to the tension caused by the spring pressed lever 46, so that a portion thereof indicated by reference numeral 52 bridges the slot 37, as is shown in Figure 6, thus allowing the lever to slide by said slot 37 without being engaged thereby. The pin 41 on the spacer collar cooperates with the slot 43 in the washer to govern the amount of movement of said washer. When the bracket is lowered over slot 37 washer 36 is moved back into its original position, i. e., the position shown in Figure 3, due to the tension of lever 46 passing over the lower radius. Washer 36 is then in such a position that it will not prevent lever end 47 from engaging slot 37 when necessary.

It is to be noted that the washers 36 are provided with grooves 53 and 54 which cooperate with the grooves in the spacer collar in a manner which will be readily understood from the foregoing description.

The spacer collar 34 may be provided with hubs 55 which register with openings 56 in washers 36 to prevent said washers from binding or failing to operate.

It is to be understood that the foregoing detailed description is merely given by way of illustration and that many variations may be made therein without departing from the spirit of our invention.

Having described our invention, what we desire to secure by Letters Patent is:

1. In a device for winding yarn on a take-up bobbin wherein the bobbin is mounted on a spindle carried in a bracket swinging about a pivot so as to permit rotation of the bobbin by gravitational contact with a friction drum, a latch and a catch therefor, the one carried by said bracket and the other fixed with reference to the pivot, said latch being radially urged, with reference to said pivot towards said catch, to engage said catch as the bracket is swung away from said friction drum so as to hold the bracket clear of said friction drum, and a masking member disposed alongside the catch with a limited motion with respect thereto, and having two oppositely inclined edges, one of which is engaged by said latch to carry said masking member to one end of its motion on swinging of said bracket away from said friction drum and lifts said latch on swinging of said bracket beyond the point of engagement between latch and catch, the latch upon further movement of the bracket, engaging the other edge and, on swinging of said bracket towards said friction drum, carrying said masking member to the other end of its limited motion and then riding up said other edge, clear of the catch, and down the first edge, leaving said bracket free to approach said friction drum.

2. In a device for winding yarn on a take-up bobbin wherein the bobbin is mounted on a spindle carried in a bracket swinging about a pivot so as to permit rotation of the bobbin by gravitational contact with a friction drum, a catch fixed with reference to the pivot for said bracket, a latch mounted on said bracket and radially urged with reference to said pivot so as to engage the catch when the bracket is swung away from said friction drum so as to hold said bracket clear of said friction drum, and a masking member disposed alongside said catch with a limited swinging movement with respect to said pivot and having two oppositely inclined edges, one of which is engaged by the latch so that said masking member is carried to one end of its limited motion when the bracket is swung away from said friction drum and lifts said latch when the bracket is further swung beyond the catch, the latch, upon further movement of the bracket, engaging the other inclined edge so as to enable swinging of said bracket and latch towards said friction drum to carry said masking member to the other end of its limited motion when said latch rides up that edge and is brought thereby over said catch, leaving said bracket free to approach the friction drum.

3. In a device according to claim 2, a notch associated with the fixed catch and disposed to receive the latch when the bracket is swung to a position immediately above the pivot so as to hold the bracket in that position, said notch having a sloping edge up which the latch may ride when the bracket is returned.

4. In a device according to claim 2, in which a pair of the brackets are arranged to swing about a pivot on opposite sides thereof, a member fixed with reference to the pivot and having two notches formed therein, one for each bracket, to constitute the fixed catches for said brackets.

5. In a device according to claim 2, in which a pair of the brackets are arranged to swing about a pivot on opposite sides thereof, a member fixed with reference to the pivot and having two notches formed therein, one for each bracket, to constitute the fixed catches for said brackets, said member having a single further notch common to both brackets and disposed to receive the latch in either bracket when the bracket is swung to a position immediately above the pivot so as to hold the bracket in that position, said notch having a sloping edge up which the latch may ride when the bracket is returned.

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