H. E. WHITE.

YARN WINDING MACHINE.

APPLICATION FILED JULY 17, 1920.

1,373,040. **Patented Mar. 29, 1921.**

Fig. 1.

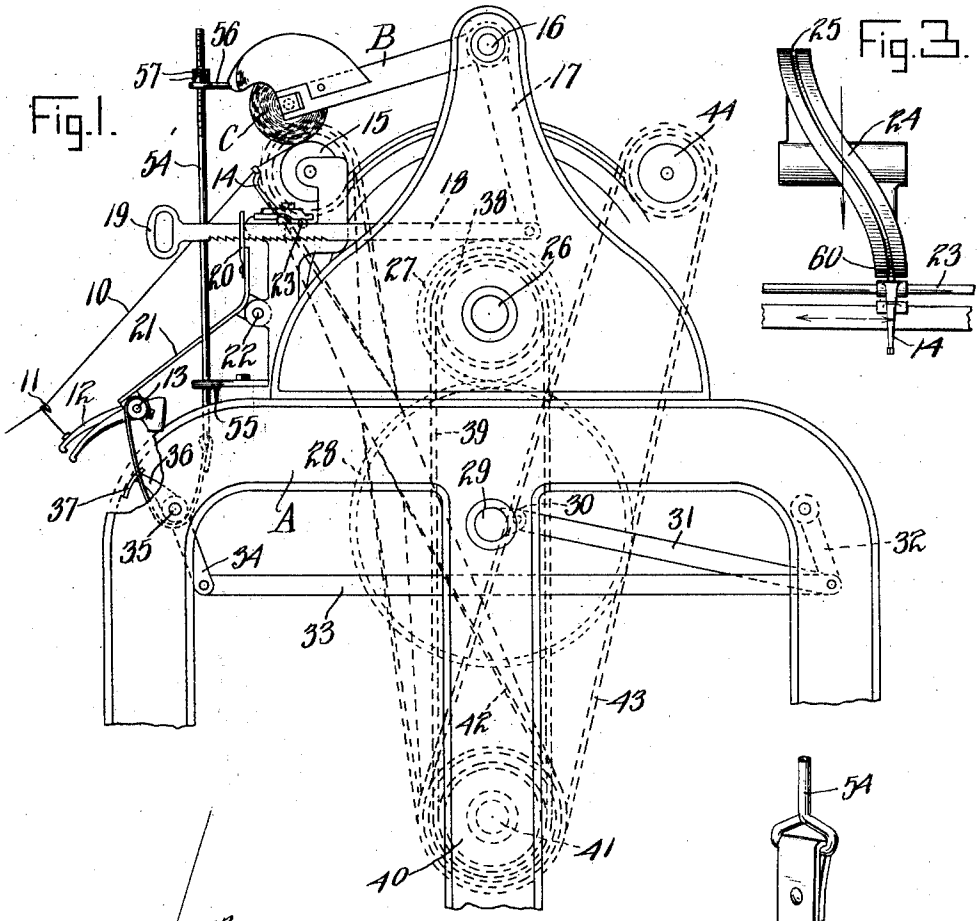


Fig. 3.

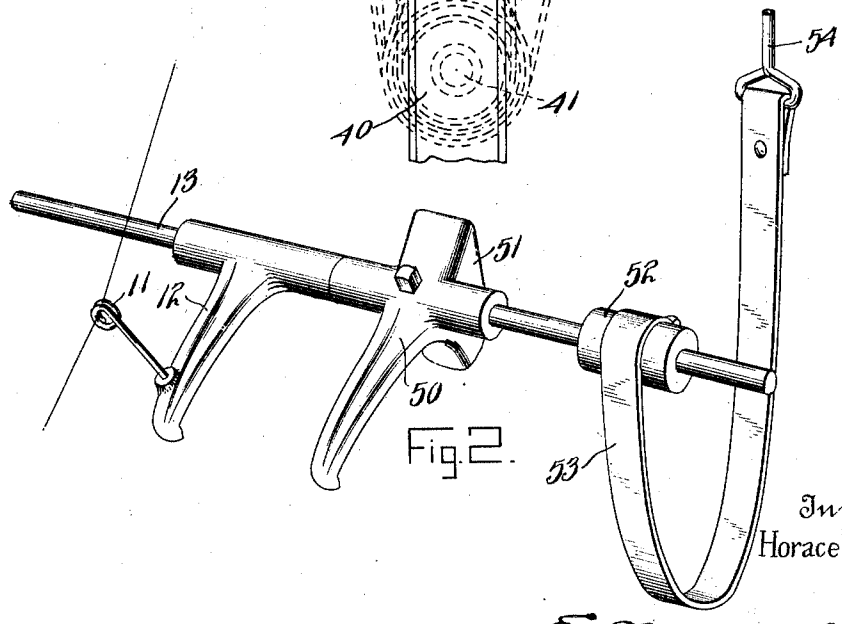


Fig. 2.

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By

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UNITED STATES PATENT OFFICE.

HORACE EVANS WHITE, OF BALTIMORE, MARYLAND.

YARN-WINDING MACHINE.

1,373,040. Specification of Letters Patent. Patented Mar. 29, 1921.

Application filed July 17, 1920. Serial No. 396,977.

To all whom it may concern:

Be it known that I, HORACE E. WHITE, a citizen of the United States, residing at Baltimore city, in the State of Maryland, have invented certain new and useful Improvements in Yarn-Winding Machines, of which the following is a specification.

In the use of machines for winding yarn on spools or bobbins, it has heretofore been necessary to determine the size of the spool by measurement or manual attention. The purpose of my said invention is to provide an attachment for spool-winding machines by which, when the spool or ball of yarn has been wound to a pre-determined size, the spool or ball will automatically be thrown out of contact with the operating mechanism and the winding of that particular spool or ball stopped, all as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings, which are made a part hereof and on which similar reference characters indicate similar parts,

Figure 1 is an end view of a yarn-winding machine of a common type showing my attachment in position on one side only thereof, it being understood that similar mechanism may be duplicated on the other side,

Fig. 2 a perspective view illustrating one of the important parts in the operation of my invention on a larger scale, and

Fig. 3 a detail view showing the thread guide and shifting cam for operating the same.

In said drawings, the portions marked A represent the frame of the machine, B the spool or core carrying frame, and C the ball of yarn in process of winding, all of which parts are of a type employed in machines in common use and require no special description. The general operation of this machine is in the main no different from other machines without my said attachment but for the purpose of more clearly understanding the operation of the attachment constituting my invention, said operation will be briefly outlined as follows:

The thread 10 to be wound upon the spool or ball C comes from the source of supply, passing through an eye 11 supported on a hook 12 loosely mounted on a shaft 13, which shaft is journaled in suitable bearings on the lower end of pivoted arm 21. Said thread also passes through the thread-guide 14, over a roller 15 with the surface of which the spool or ball of yarn C is in frictional contact. Said ball is carried on the frame B which is secured on a rock-shaft 16 mounted in bearings in the top of the frame. An arm 17 depends from said shaft 16 and at its lower end is hinged to a bar 18 having a handle 19 upon its outer end and teeth formed in its lower edge which engage with the edge of a slot formed in a guide 20 on the upper end of the arm 21, which arm is pivoted at 22 and the lower end of which carries the bearings in which shaft 13 is mounted. The thread-guide 14 is mounted to slide on a supporting rod 23 and the cam 24 engages by means of its groove 25, with a pin 60 projecting from the hub of said thread-guide and, as said cam rotates, operates in the usual manner to guide the thread lengthwise of the spool, back and forth, during the winding. Said cam 24 is driven from the shaft 26, which shaft carries a pinion 27 which meshes with a larger pinion 28 on a shaft 29. Said shaft 29 carries a crank 30 connected by a rod 31 to a pivoted link 32. Said link 32 is connected by a connecting rod 33 with the lower end of an arm 34 mounted on a shaft 35 which carries on its opposite side an arm 36 to the outer end of which is attached a segmental plate 37, which thus is made to oscillate back and forth constantly during the operation of the machine. Shaft 26 is also provided with a belt pulley 38 connected by a belt 39 with a pulley 40 on a shaft 41 mounted in the lower part of the frame. Said shaft 41 carries pulleys which are connected by belts 42 and 43 to the cylinders or rollers 15 and 44 respectively on the opposite sides of the machine for driving the spools.

Should the yarn 10 break, hook 12 will fall down, being loosely mounted on shaft 13, and its point engage under the edge of plate 37 which, through the connection with shaft 39, will rock arm 21 on its pivot 22 and through the connection between plate 20 and arm 18, will swing arm 17 forward on shaft 16 and elevate the spool-carrying arm or frame B, lifting spool C free from roller 15 and thus stop the winding of the yarn thereon.

Thus far the machine and the operation described are of a common and well known type.

On shaft 13 I fix a second hook 50 pref-

erably formed with a counter-balance 51 and also fix thereon a collar 52 to which collar I attach one end of a strap 53. Said strap passes down under shaft 35 and at its other end is connected to an eye in the lower end of a rod 54. Said rod 54 passes through a guide 55 on one part of the frame and a guide 56 on frame carrying spool C. The upper end of said rod is screw-threaded and jamb-nuts 57 are mounted thereon above the guide 56.

It will thus be noted that as the winding proceeds and the size of the ball C increases, frame B gradually rises and, as it rises, carries with it said rod 54 which operates to gradually turn shaft 13 and move hook 50 downward until finally the point of the hook engages under the edge of segment 37. Then the connections operate in the same manner as when the thread breaks, to throw the spool out of contact with roller 15 and stop the winding. This operation can be timed by the adjustment of the jamb-nuts 57 so that it will take place when the spool has reached any predetermined size, as will be readily understood.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is—

1. In a yarn-winding machine a pivoted ball support, a vibrating arm, means for operating said vibrating arm, a connection running from said pivoted ball support to a point adjacent to said vibrating arm and means operated by the increasing size of the ball as it is wound for connecting said connection with said vibrating arm, substantially as set forth.

2. In a winding machine, a rotating receiving element, means for driving the same, and means for stopping the winding comprising a vibrator, means for engaging the vibrator, said means being normally held out of action, and means controlled by the size of the wound mass for moving said engaging means positively into the path of the vibrator, substantially as set forth.

3. In a winding machine, a receiving element, means for driving the same, means for stopping the receiving element comprising a vibrator, a pivoted shaft, means on the shaft for engaging the vibrator, counterbalancing means acting to prevent such engagement, and means adjustably connected to the receiving element for moving the engaging means into the path of the vibrator when the wound mass reaches a predetermined size, substantially as set forth.

4. In a drum winder, a driving drum, a receiving element resting thereon and moving away from the drum as the winding progresses, and means for stopping the winding comprising a vibrator, a hook adjacent the vibrator, and means to move the hook progressively toward the vibrator as the receiving element moves away from the drum, substantially as set forth.

5. In a drum winder, a driving drum, a receiving element resting thereon and moving away from the drum as the winding progresses, and means for stopping the winding comprising a vibrator, a hook adjacent the vibrator, and a flexible connection from the receiving element to the hook to move the hook down as the receiving element rises, substantially as set forth.

6. In a drum winder, a driving drum, a receiving element driven thereby, and means for stopping the winding comprising a rod adjustably connected to the receiving element and extending downward therefrom, a shaft, a hook on the shaft, a vibrator to engage the hook, and means connected to the rod and the shaft to move the hook into the path of the vibrator when the winding reaches a predetermined size, substantially as set forth.

7. In a drum winder, a driving drum, a pivoted bracket carrying the same, and means for moving the bracket to disconnect the receiving element from the drum comprising a rod adjustably connected to the receiving element and extending downward therefrom, a shaft, a hook on the shaft, a vibrator to engage the hook, and means connected to the rod and the shaft to move the hook into the path of the vibrator when the winding reaches a predetermined size, substantially as set forth.

In witness whereof, I have hereunto set my hand and seal at Baltimore, Maryland, this 16th day of July, A. D. nineteen hundred and twenty.

HORACE EVANS WHITE. [L. S.]

Witnesses:
D. D. TOWERS,
JOHN W. DORSEY.