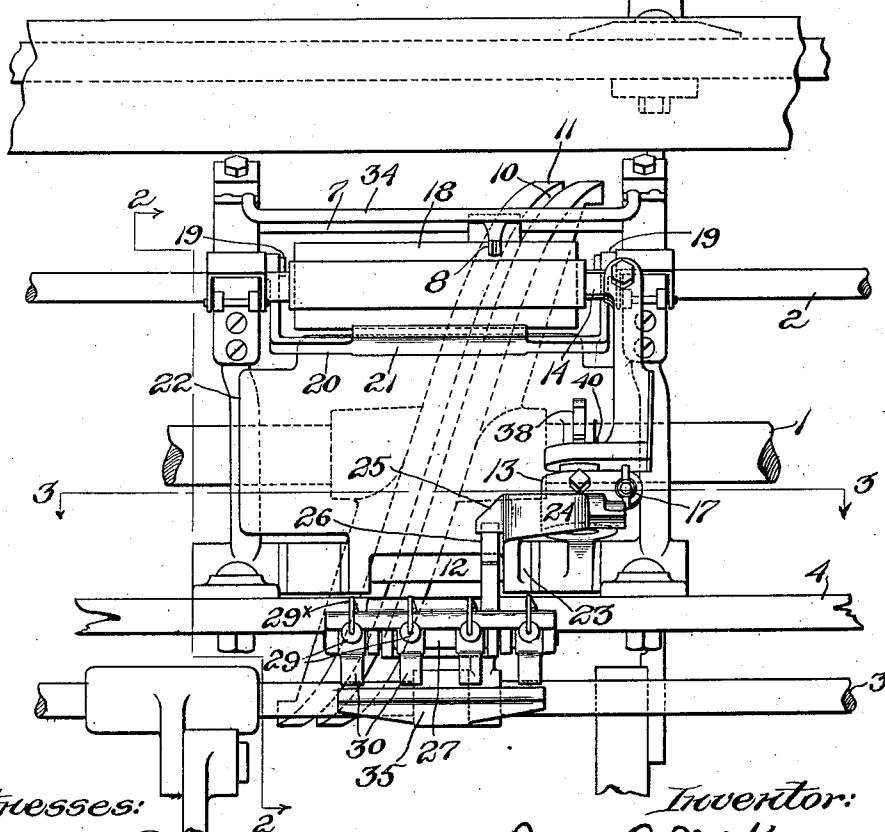


1,018,920.

2 SHEETS—SHEET 1.



 *Inventor:*
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Attys.

J. O. McKEAN.
WINDING MACHINE.
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1,018,920.

Patented Feb. 27, 1912.

2 SHEETS—SHEET 2.

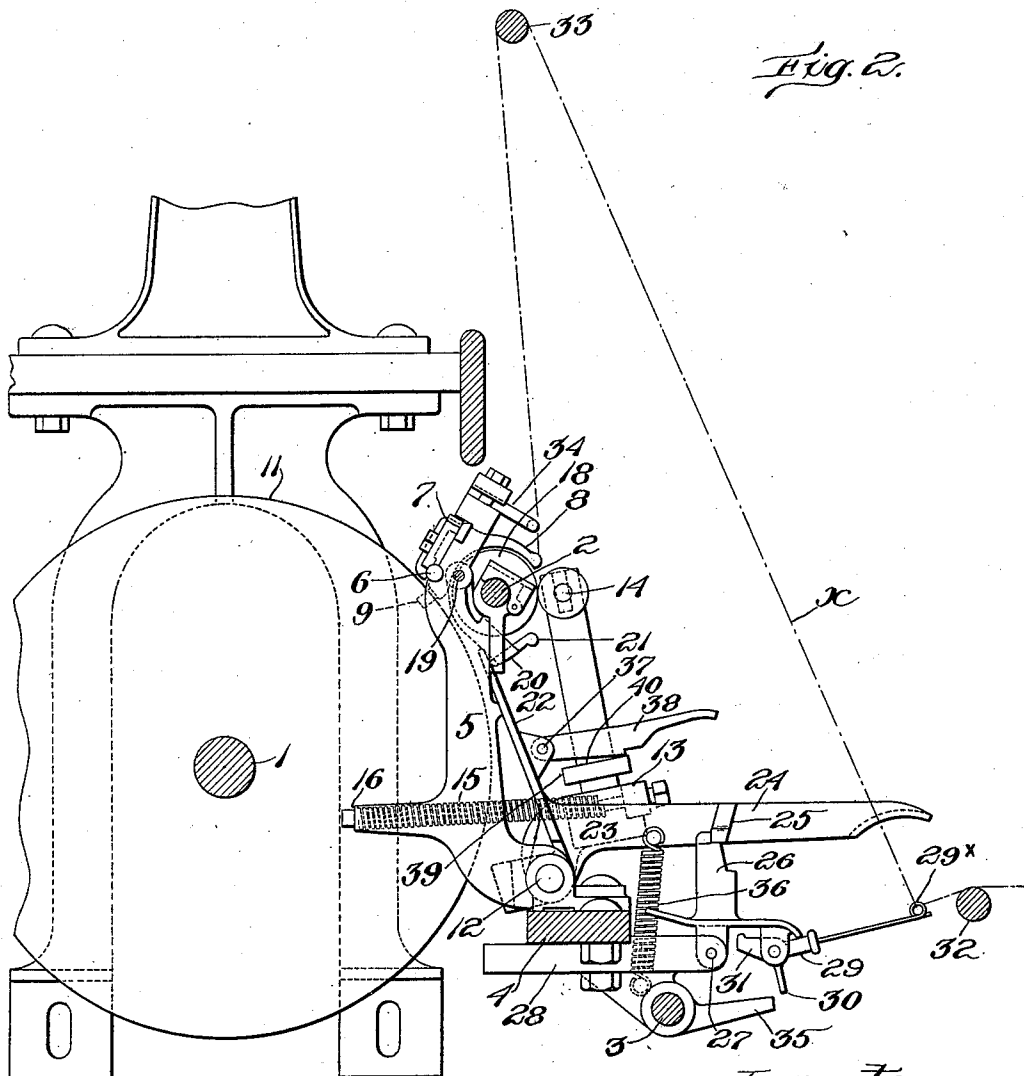


Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN O. McKEAN, OF WESTFIELD, MASSACHUSETTS, ASSIGNOR TO FOSTER MACHINE COMPANY, OF WESTFIELD, MASSACHUSETTS, A CORPORATION OF MAINE.

WINDING-MACHINE.

1,018,920.

Specification of Letters Patent.

Patented Feb. 27, 1912.

Application filed November 7, 1910. Serial No. 590,977.

To all whom it may concern:

Be it known that I, JOHN O. McKEAN, a citizen of the United States, residing at Westfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Winding-Machines, of which the following is a specification.

My invention relates to winding machines and particularly to winding machines of that class which are employed in "doubling" yarns preparatory to twisting the same.

The object of my invention is to provide an improved winding machine of this type and also to provide an improved stop-motion mechanism for such machines.

Most stop-motion mechanisms for winding machines have heretofore been so constructed that when a thread broke or gave out and the cop was automatically shifted out of engagement with its driving roll or drum, the cop would continue to revolve until its momentum was exhausted with the result that a considerable amount of thread would be wound upon the cop in irregular and improper fashion so that before restarting the machine the operator had to unwind this improperly wound portion and take up the slack thus produced. This required time and labor and was objectionable. In my improved winding machine the cop is rotatably supported in proper position with relation to its drive roll or drum by a movable cop-holder which automatically adjusts itself to the growth of the cop and a shifter for said cop holder is provided normally occupying an inoperative position but so constructed and arranged that when operated it directly engages the cop being wound so as to both shove the cop out of engagement with its drive roll or drum and act as a brake to stop the rotation of the cop. In the best form of my invention, I provide automatic means for operating said shifter when the thread or yarn being wound breaks or fails.

As herein shown the cop-holder is a pivotally supported arm or frame yieldingly held toward the cop-driving roll by a pressure spring and a feature of my invention consists in the peculiar relative arrangement of the spring and cop-holder whereby as the cop grows in size the resulting movement of the cop-holder on its pivot auto-

matically compensates for the increased force of the pressure spring so that the effective force of said spring remains substantially the same throughout the formation of the cop. The advantage of this feature of my invention is that, due to the more uniform pressure, a more uniform wind is produced than heretofore.

In the accompanying drawings: Figure 1 is a front elevation of part of a winding machine embodying one form of my invention; Fig. 2 is a section on line 2—2 of Fig. 1; and Fig. 3 is a section on line 3—3 of Fig. 2.

The machine herein shown comprises three main shafts 1, 2 and 3. The shaft 1 is the cam shaft of the machine and is continuously driven through the usual means, not shown, at the proper speed with relation to the continuously driven cop-drum driving shaft 2. The shaft 3 is the usual continuously oscillated rock shaft forming part of the stop-motion mechanism.

Bolted to a cross-bar 4 is a pair of standards 5, 5, carrying two guide-rods 6 and 7 on which is slidably mounted a thread guide 8 provided with a roll or lug 9 extending into the slot 10 of a thread-guide actuating cam 11 fixed to shaft 1. As cam 11 rotates with shaft 1 the thread guide 8 is shifted back and forth on rods 6 and 7 to lead the thread properly onto the cop being formed. The uprights 5, 5, support a fulcrum rod or bar 12 on which is pivotally mounted a cop-holder 13 provided at its upper end with a laterally extending spindle 14 adapted to hold the cop shell or spool onto which the thread is wound. A spring 15 connected at 16 with one of the uprights 5 and at its other end with a screw 17 on cop-holder 13, serves to hold the cop on spindle 14 yieldingly against a cop-driving roll 18 fixed to the shaft 2. As the cop grows in diameter cop-holder 13 is swung outwardly on its pivot 12 thereby stretching spring 15 and increasing the force of its pull but at the same time the movement of screw 17 relatively to fulcrum bar 12 and the point 16 decreases the leverage through which the spring 15 acts upon holder 13, with the result that the decrease in leverage compensates to a marked degree for the increase in the pull of spring 15, and the effective force of said spring is maintained substantially uniform, or more nearly uniform than has

heretofore been possible. This causes the cop to be formed of uniform density from its middle to its exterior.

Pivoted at 19, 19, to the uprights 5, 5, is
 5 a bail-shaped member 20 normally occupying an inoperative position below the drive roll 18 with its middle portion 21 out of range of the growing cop on spindle 14 and resting against the upwardly extending
 10 plate-like arm 22 of a lever 23 pivotally mounted on fulcrum bar 12. This member 20 is the shifter above referred to. The other arm 24 of lever 23 is shaped as a handle and provided with a laterally projecting lug 25 normally resting upon a latch
 15 26 pivoted at 27 to a yoke or bracket 28 bolted to the under side of cross-bar 4. On the latch 26 is pivoted one or more drops 29, four being herein shown, each made with an
 20 eye 29*, arm 30 and lug or tail 31. The ends of the thread or yarn α that are being wound onto the cop extend from the supply through guides (not shown) mounted on a cross-bar 32 and thence through eyes 29*
 25 upwardly over another cross-bar 33, then downwardly across a guide bar 34 fixed at its ends to uprights 5, 5, and from bar 34 through thread guide 8 to the cop on spindle 14. Should any one of the four threads
 30 α break or give out its drop 29 falls until stopped by tail 31 engaging latch 26 which brings the arm 30 of the drop into the path of a vibrating arm 35 fixed to shaft 3. On its next upward stroke the arm 35 strikes
 35 arm 30 and thereby swings latch 26 on its pivot 27 out from under lug 25 whereupon a spring 36, fastened at one end to arm 24 and at its other end to yoke 28, swings lever 23 on fulcrum bar 12 in a direction to
 40 cause arm 22 to swing the shifter 20 upwardly on its pivots 19. As shifter 20 is thus swung upward, its middle part 21 strikes the periphery of the cop on spindle 14 and acts through the cop to shove cop
 45 holder 13 away from drive roll 18. In this way not only is the cop shifted away from drive roll 18 but the engagement of shifter 20 with the periphery of the cop acts to immediately stop rotation of said cop and prevent
 50 any winding after the thread has been car-

ried out of engagement with thread guide 8. Also the shifter 20 when in its operative position and in engagement with the cop serves to prevent the thread unwinding and consequently there is no slack to be taken up before starting the machine again.

In starting or re-starting the machine the operator simply pulls upward upon the arm 24 of lever 23 which returns the parts to their normal positions again.

Pivoted at 37 to the arm 22 of lever 23 is a gravity latch 38 cooperating with a shoulder 39 on cop holder 13 and normally resting upon a ledge or shelf 40 on said holder. This latch 38 is provided so that
 65 when desired the operator may pull the holder 13 away from drive roll 18, the latch 38 falling into position behind shoulder 39 and serving to prevent the return of the holder until the operator lifts said latch 38.

What I claim is:—

1. In a winding machine, in combination, a cop-driving roll; a pivotally supported cop-holder which adjusts itself to the growth of the cop, and a spring for yieldingly
 75 holding the cop against the cop-driving roll, said spring being connected with the cop-holder at a point which is shifted by the movement of the cop-holder resulting from the growth of the cop so as to compensate
 80 in leverage for the increasing force of the spring.

2. In a winding machine, in combination, a movably supported cop holder; a cop driving roll; a shifter and brake swinging
 85 upward to engage the cop; a bell-crank lever, one end engaging the shifter and the other supported by a prop carrying thread supported drop-wires, and positively actuated means to remove the prop upon the
 90 breakage or failure of a thread, so as to cause the bell-crank lever to throw the shifter and brake.

Signed by me at Westfield, Massachusetts, this 3rd day of November, 1910.

JOHN O. McKEAN.

Witnesses:

ALICE C. BREEN,
 THOMAS P. RILEY.