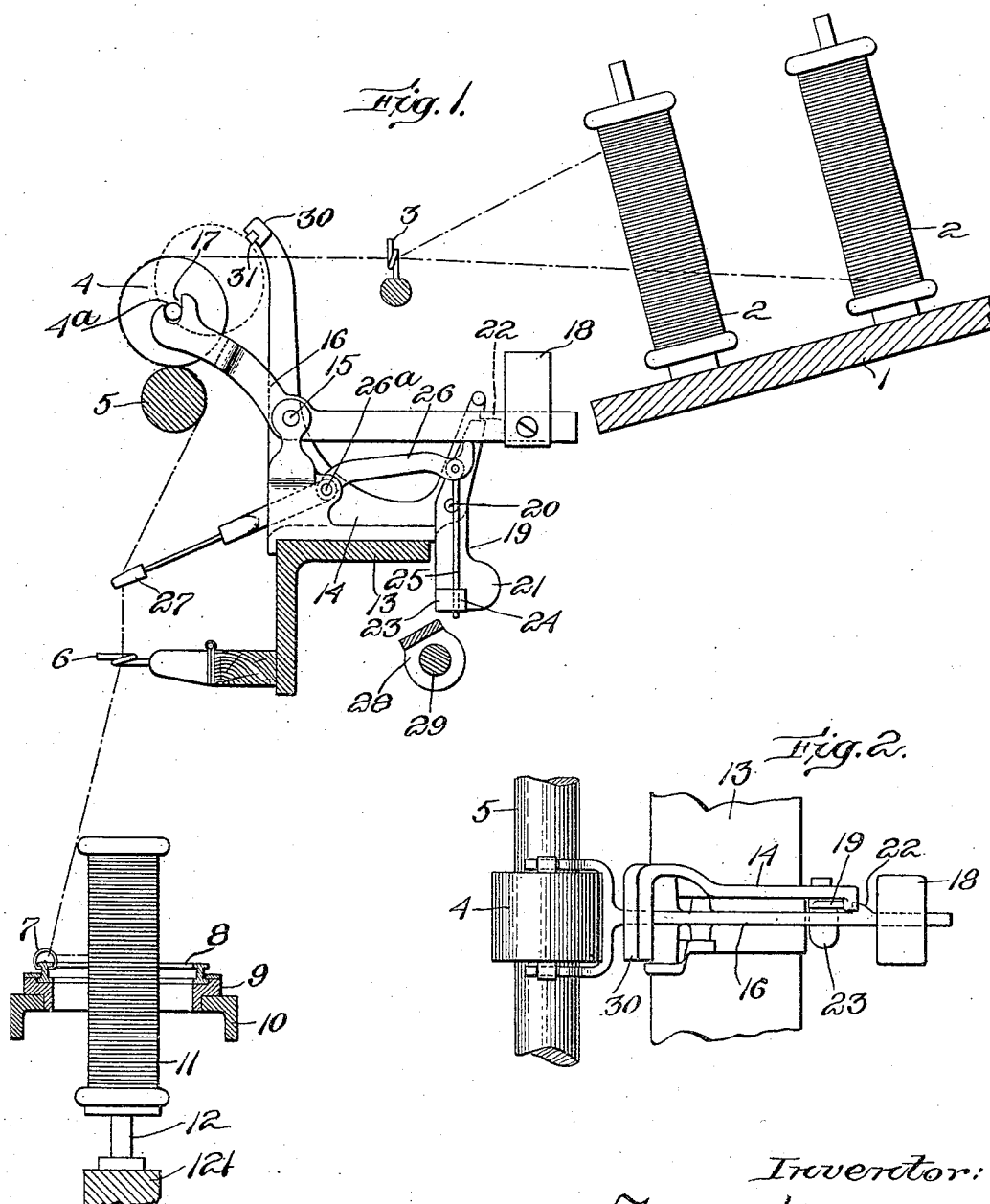


T. NUNN.
 TWISTING MACHINE.
 APPLICATION FILED APR. 20, 1908.

936,346.

Patented Oct. 12, 1909.



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UNITED STATES PATENT OFFICE.

THOMAS NUNN, OF PROVIDENCE, RHODE ISLAND.

TWISTING-MACHINE.

936,346.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed April 20, 1908. Serial No. 428,005.

To all whom it may concern:

Be it known that I, THOMAS NUNN, a subject of the King of Great Britain, and resident of Providence, in the county of Providence and State of Rhode Island, have invented new and useful Improvements in Twisting-Machines, of which the following is a specification.

My invention relates to machines for twisting yarns and the like and particularly to doubling and twisting machines.

The object of my invention is to provide an improved stop motion for twisting machines which will act automatically upon the breaking of a thread to separate the feed rolls to stop the feed, take up the slack of the broken end, and hold the broken end so that the latter cannot be picked up by or entangle with adjacent threads or mechanism.

As herein shown I have made the top feed roll of the twister movable toward and from the other roll and provide a top roll shifter that normally permits said roll to occupy an operative or feeding position. This shifter may also have the function of supporting said roll. Means controlled by the yarn or thread is provided which acts automatically to operate the shifter and through the latter move the top roll away from the lower feed roll when the yarn or thread breaks or when one of the strands of the yarn or thread breaks. As the top roll is thus carried away from its cooperating feed roll it is brought into engagement with a brake shoe or abutment which stops rotation of the top roll and preferably at the same time causes the broken end or ends to be so gripped and held between the top roll and brake shoe as to prevent any feeding movement of the yarn or thread past said brake. The movement of the top roll away from the other feed roll not only stops the feed but also acts to take up the slack of the broken end so as to prevent entanglement of the latter with adjacent threads or mechanism, while the brake shoe by locking the thread and top roll further assists in preventing such entanglement and at the same time prevents displacement of the end or ends, holding the latter in convenient position to be tied up by the operator.

Having reference to the drawings:—
Figure 1 is a sectional view of a portion of a doubling and twisting machine embody-

ing one form of my invention; Fig. 2 is a plan view of the stop motion mechanism detached.

Having reference to the drawings, 1 represents the usual creel carrying two rear spools 2. The threads from spools 2 extend forward through a guide 3, thence around the top roll 4 and lower roll 5 through a second guide 6 to the traveler 7 of the twisting ring 8. As usual ring 8 is mounted to rotate freely in a base 9 secured to the ring rail 10 that is raised and lowered in the ordinary fashion. The front winding spool 11 is mounted as usual upon a rotating spindle 12 supported by the stationary step rail 121.

Opposite the rolls 4 and 5 and fastened to the frame 13 of the machine is a bracket 14 to which is pivoted at 15, the shifter 16, above referred to, said shifter being made with a forked front arm provided with sockets 17 to receive the trunnions 4^a of top roll 4. The rear arm of shifter 16 has adjustably fastened to it a weight 18 but normally this arm of the shifter is supported by a trigger latch 19 pivoted at 20 to bracket 14. This latch 19 is weighted at its lower end as at 21 so that it tends to assume a vertical position with its upper end or nose under a lug 22 projecting laterally from shifter 16. At its lower end latch 19 is made with a laterally projecting lug 23 provided with a hole 24 through it as indicated by dotted lines in Fig. 1. Through this hole extends the lower end of a drop wire 25 loosely pivoted at its upper end to the rear arm of a director lever 26 pivoted loosely at 26^a to the bracket 14. The forward arm of lever 26 carries an eye or the like 27 through which passes that portion of the yarn or thread that extends from the feed rolls 4 and 5 to the guide eye 6. The rear end of lever 26 that carries drop wire 25 is heavier than the forward end so that when that part of the yarn or thread engaged by eye 27 breaks, lever 26 swings on pivot 26^a so as to carry the lower end of drop wire 25 into the path of a continuously vibrating actuator 28 fixed to a rock shaft 29 driven in any suitable manner from the shaft of the continuously rotating lower feed roll 5 or from any other convenient source of power. The actuator 28 thereupon engages the lower end of wire 25 and swings the latter and the lower arm of latch 19 to the right in Fig. 110

1 thus moving the nose or upper end of latch 19 out from beneath lug 22, whereupon the weight 18 swings shifter 16 on pivot 15 carrying roll 4 away from roll 5 and against
 5 a brake shoe 30. The brake shoe 30 is herein shown as in the form of a bar at the upper end of and integral with an arm projecting up from bracket 14. The face of this bar toward roll 4 is made with a lengthwise
 10 groove to hold a strip of fiber, leather or other somewhat yielding material 31 against which roll 4 is carried with the yarn or thread pinched and tightly held between. The engagement of roll 4 with brake shoe
 15 30 immediately stops rotation of said roll and besides preventing the feeding forward of slack yarn or thread existing between said roll and the rear spools, acts also to lock or hold the thread between said roll and brake
 20 shoe to assist the upward movement of roll 4 in preventing the broken end becoming entangled with adjacent threads or mechanism. Also the broken ends are conveniently held in readiness to be tied up and do not become
 25 displaced from between rolls 4 and 5.

In restoring the mechanism to operative position after the broken ends are tied up, the end 27 of lever 26 is pressed down, thus lifting the rear end of lever 16 and permitting latch 19 to pass under lug 22 to hold the lever 16 in this operative position.

As stated above the eye 27 engages those portions of the two yarns supplied from creel 1 which extend from the feed rolls 4 and 5
 35 to the front bobbin 11 and this stretch is composed of the two threads from the spools 2 which at this point are twisted together owing to the rotation of the traveler 7. The two threads are themselves, however, each
 40 twisted in the same direction as its companion thread while the traveler 7 rotates in a direction to twist those two threads jointly in the opposite direction. Therefore it follows that if either thread breaks the rotation
 45 of traveler 7 will untwist the remaining thread and thereby break it thus causing the stop motion to act.

What I claim is:—

1. In a twisting machine, in combination,
 50 a pair of feed rolls, a stationarily supported brake shoe adjacent the movably supported roll but normally out of contact with the latter, automatic means actuating said movable support to normally hold its roll in
 55 operative position with respect to the other roll, said automatic means comprising a lever carrying at one end a thread eye and having its opposite end engaging a latch, whereby upon the breaking of a thread said
 60 latch will be operated to cause said movable

roll to be elevated into engagement with said brake shoe.

2. In a twisting machine, in combination, a pair of feed rolls; a movable support for one of said rolls, a stationarily supported
 65 brake shoe adjacent the movably supported roll but normally out of contact with the latter, positively actuated automatic means controlled by the thread for elevating the movably supported roll away from the station-
 70 ary roll and into engagement with the brake shoe, said automatic means actuating said movable support to normally maintain the movably supported roll in operative position with relation to the other roll.

3. In a twisting machine, an angular lever having a lug and an adjustable weight at one end and carrying a movable roll at its
 75 opposite end, a stationary roll, a brake shoe having a face of comparatively soft material, 80 a weighted latch normally having its upper end engaging said lug and supporting said lever, a detector lever carrying a drop wire, arranged in sliding engagement with said
 85 latch and a vibrating actuator adapted to co-operate therewith, whereby upon the breakage of a strand the latch is tripped and the movable roll elevated by its weighted lever, into engagement with the brake.

4. In a twisting machine, in combination, 90 the lever 16 that is operated to stop the action of the machine; the detent 19 coöperating with said lever; the resetting detector lever 26; means controlled by lever 26 for operating detent 19 to free lever 16; the
 95 feed roll 4 supported by lever 16; the feed roll 5, and the brake 30 supported in the path of roll 4, substantially as described.

5. In a twisting machine, the combination of a fixed feed roll; a second feed roll sup-
 100 ported upon a pivoted shifter normally tending to shift the second roll; a brake shoe in the path of the second roll, when shifted; a trigger support for the shifter; a detector lever engaging the twisted thread and at its
 105 opposite end carrying an actuating wire in sliding engagement with the trigger support and a continuously moving actuator whose path crosses the place of the actuating wire when in its dropped position, all organized
 110 to cause the trigger support to be moved and permit the shifter to throw the second roll into contact with the brake upon the breaking of the thread.

Signed by me at Boston, Massachusetts, 115 this eighteenth day of April, 1908.

THOMAS NUNN.

Witnesses:

W. E. PETTENGILL,
 OLIVER MITCHELL.