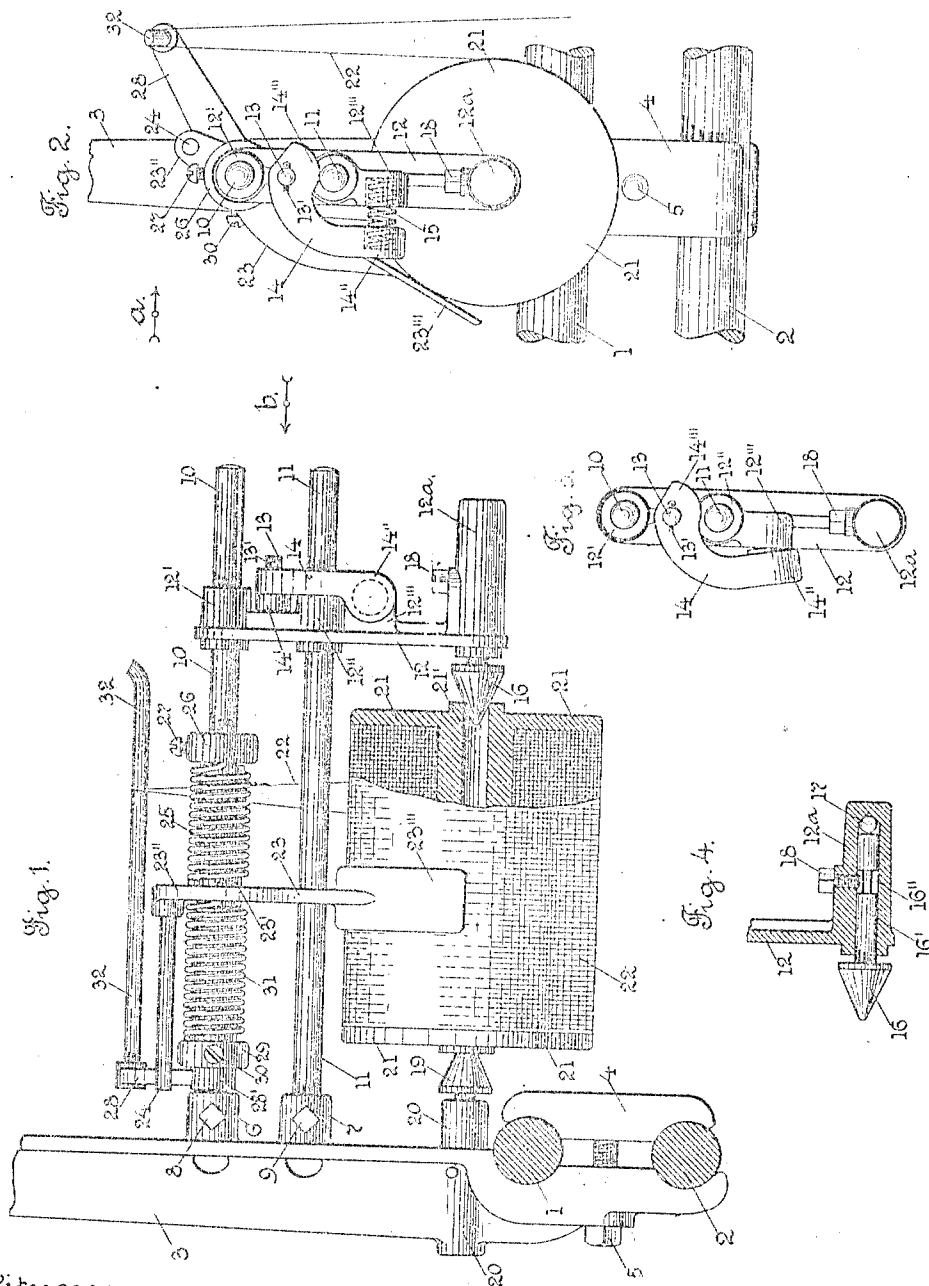


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SPOOL HOLDER AND TENSION DEVICE FOR WINDING MACHINES.
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1,040,768.

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SPOOL-HOLDER AND TENSION DEVICE FOR WINDING-MACHINES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, Erra H. Ryon, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Spool-Holders and Tension Devices for Winding-Machines, of which the following is a specification.

My invention relates to a machine for winding cops, spools, etc.

The object of my invention is to provide an improved spool holder, and thread tension device for the cops and spools from which the thread is unwound, in a machine of the class referred to.

In my improvements, I provide a holder for holding spools, etc., from which thread or yarn is to be unwound. The spool is supported at each end by two separate revolvable spindles which have tapered heads which enter a short distance, at each end of the spool, into a central opening, and hold the spool so that the spool and spindles will revolve together. One of the supporting spindles is held in a fixed or stationary bearing, and the other spindle is held in a movable bearing relatively to the spool, which bearing is preferably carried on an arm mounted on two rods; said arm can be readily moved on said rods toward and away from the other spindle, and locked in its adjusted position, according to the width of the spool.

The tension device for the spool consists preferably of a spring actuated arm having a flat surface or pad thereon, which bears directly on the thread or yarn on the spool, and acts as a friction on the spool. The friction of the pad on the spool is automatically increased or decreased, according to the tension or pull on the thread or yarn unwound from the spool.

My invention consists in certain novel features of construction of my improvements as will be hereinafter fully described.

I have only shown in the drawing a detached portion of a supporting arm of a winding machine of the class referred to, with my improvements in spool holder, and tension device attached thereto, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawing:—Figures 1 is a side view of my improvements in spool

holder, looking in the direction of arrow *a*, Fig. 2. Fig. 2 is a front view of the spool holder shown in Fig. 1, looking in the direction of arrow *b*, same figure. Fig. 3 shows the movable holder shown in Fig. 2, detached, and the clamp lever released, and, Fig. 4 is a section through the lower portion of the movable holder shown at the right in Fig. 1.

In the accompanying drawing, 1 and 2 are two traverse rods or shafts of the winding machine, having clamped thereon the upwardly extending spool arm 3, by a cap 4, and bolt 5, see Fig. 1. The arm 3 has in this instance two bosses 6 and 7 thereon, into which extends and are secured by set screws 8 and 9, the ends of two horizontally extending rods 10 and 11, respectively.

A movable spool holder arm 12 has hubs 12' and 12'' thereon, which are loosely mounted on the rods 10 and 11 respectively and are adapted to be moved outwardly or inwardly thereon, according to the width of the spools to be used.

A pin 13, secured to the spool holder arm 12, has loosely pivoted thereon the hub 14' of a downwardly extending arm or lever 14. A split or cotter pin 13' holds the hub 14' on the pin 13. The lever 14 is provided at its lower end with an enlarged head 14'', which is recessed in this instance and adapted to receive one end of a helically coiled expansion spring 15, see Fig. 2. The other end of the spring 15 extends into a recess or chamber in the boss 12'' on the spool holder arm 12, and acts to move outwardly the lower end of the lever 14. The hub 14' of said lever has thereon, in this instance, an eccentric or cam shaped extension 14''', see Fig. 2, which is adapted to engage the rod 11 through the action of the spring 15. The engagement of the cam shaped extension 14''' with the rod 11, causes the movable spool holder arm 12 to be held in its desired position.

To move the spool holder arm 12 outwardly or inwardly, the arm 14 is moved toward the holder arm 12, as shown in Fig. 3, to release the cam shaped extension 14''' thereon from engagement with the rod 11, the spool holder arm 12 is then free to be moved in either direction on the rods 10 and 11.

The downwardly extending end of the arm 12 is provided with an elongated boss

12^a, which forms a bearing for, and loosely receives the shank 16' on the tapered spindle head 16, see Fig. 4. The shank 16' bears at its inner end, preferably against a ball 17 within the boss 12^a, and said shank 16' is provided with an annular groove or recess 16'', into which extends the end of a set screw 18, which turns in a threaded hole in the boss 12^a, and prevents the spindle 16 from moving longitudinally. A second spindle with a tapered head 19 is suitably journaled in a boss or bearing 20 on the arm 3, and is of the same construction as the spindle 16. Both the tapered spindle heads 16 and 19 are revoluble independently of each other with the spool.

A yarn spool 21, having in this instance a central opening 21' therethrough, and carrying the yarn 22, is held between the two tapered spindle heads 16 and 19, and can be readily put in place or removed, by moving the holder 12, through the releasing of the engagement of the cam shaped extension 14''' on the arm 14, with the rod 11, as above described.

The thread tension device consists in this instance of an arm 23 having an elongated hub 23' thereon, which is loosely mounted on the upper horizontally extending rod 10. An arm 23'', extending upwardly from the hub 23', carries a horizontally extending wire 24. A helically coiled torsion spring 25 encircles the hub 23' on the arm 23, and is connected at one end to said arm 23, and at its other end to a collar 26, secured by a set screw 27 on the rod 10. On the arm 23 is a pad 23''', which is adapted to bear against the thread or yarn 22 on the spool 21 to act as a friction on the spool, the torsion spring 25 acting to yieldingly press the pad 23''' against the yarn or thread 22.

A second arm 28 has its hub 28' loosely mounted on the rod 10. A collar 29 is secured on the hub 28' by a set screw 30 and has connected thereto one end of a coiled torsion spring 31. The other end of said spring 31 is attached to the arm 23. Said spring 31 acts to yieldingly move upwardly the arm 28 until it engages the wire 24 extending out from the extension 23'' on the arm 23. The engagement of the arm 28 with the wire 24, causes the pressure of the friction pad 23''' on the yarn or thread 22 to be increased. Secured to the outer end of

the arm 28 is a wire 32, around which the thread 22 passes, see Fig. 2. The tension or pull on the thread 22 in unwinding the thread from the spool 21, causes the downward movement of the wire 32, and also the arm 28, and disengages said arm 28 from the wire 24, to decrease the friction or pressure of the pad 23''' on the yarn or thread 22.

The wire 32 over which the thread from the spool passes acts as a guide for the thread, and extends parallel to the spool, and is preferably of a length equal to the length of the spool, so that the thread as it is unwound or drawn off from the spool, will extend in a substantial vertical plane. In unwinding or drawing the thread from the spool, through a guide eye, as is customary, the thread is liable to be cut or broken, but drawing it over the guide wire or rod 32, the thread is free to travel in the direction of the length of said guide wire or rod, and is not liable to be chafed or broken.

The advantages of my improvements will be readily appreciated by those skilled in the art. They are very simple in construction and can be readily applied to winding machines of ordinary construction.

It will be understood that the details of construction of my improvements may be varied if desired. I have shown and described herein a spool 21 on which the yarn is wound, but it will be understood that a cop, a cylinder or other device, may be used if preferred.

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

In a winding machine of the class described, a spool from which the thread is to be unwound, two supporting revoluble spindles, one movable longitudinally, a friction pad to bear against the thread on the spool, a spring connected to said pad, to cause the same to be pressed against said thread, a rod or guide over which the thread passes from the spool, a second spring connected to said rod or guide, and to said friction pad, whereby the tension of the thread over the rod or guide lessens the pressure of the friction pad on the thread.

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