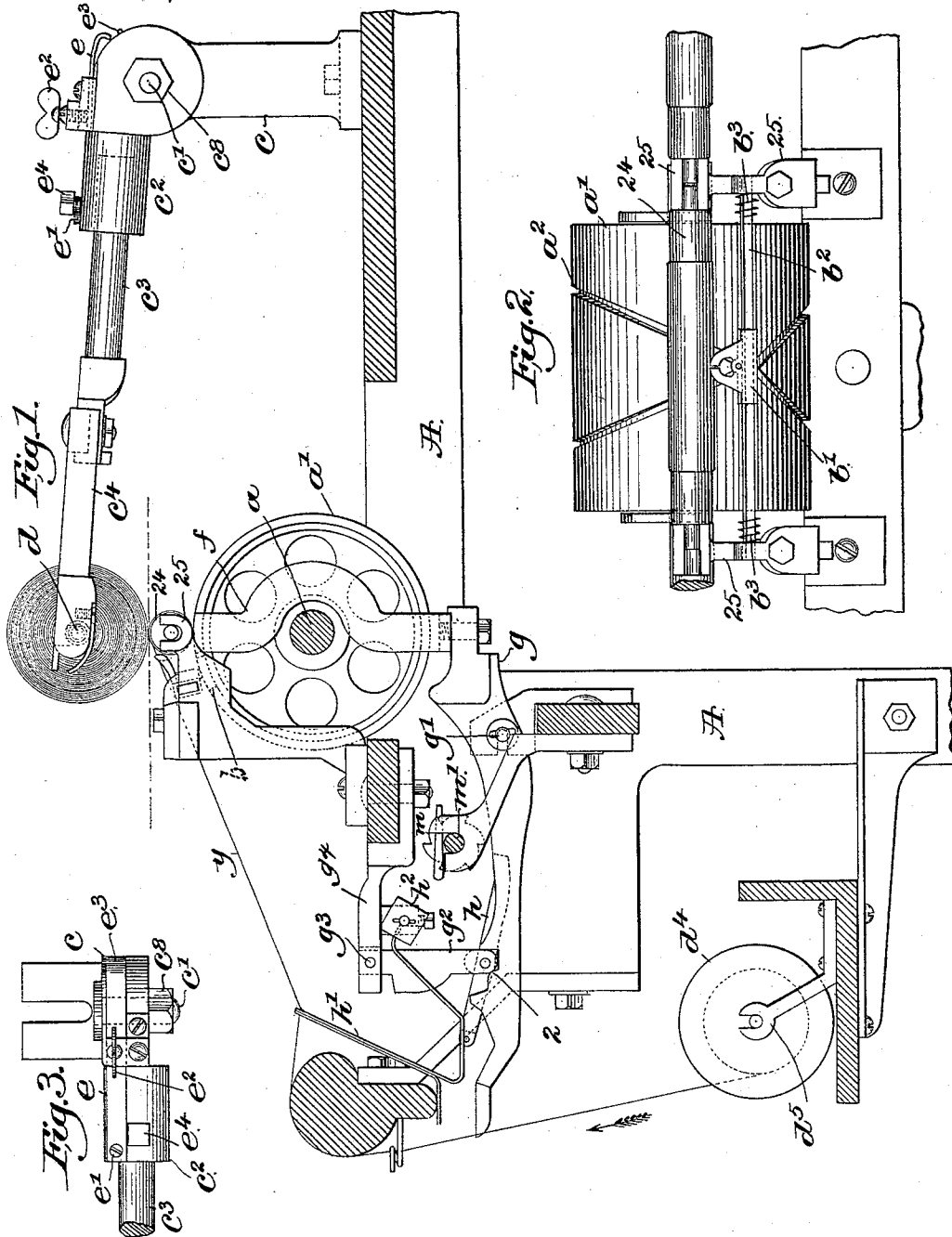


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J. W. FOSTER.
SPOOLING MACHINE.

No. 499,668.

Patented June 13, 1893.



Witnesses.
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By Crosby & Greyson, Printers.

UNITED STATES PATENT OFFICE.

JOHN W. FOSTER, OF WESTFIELD, MASSACHUSETTS, ASSIGNOR TO THE
FOSTER MACHINE COMPANY, OF SAME PLACE.

SPOOLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 499,668, dated June 13, 1893.

Application filed December 12, 1892. Serial No. 454,911. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. FOSTER, of Westfield, county of Hampden, State of Massachusetts, have invented an Improvement in Spooling-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention has for its object to improve and simplify the construction of spooling machines, my improved machine being adapted to wind yarn on tubes either conical or tubular.

The tube to be wound, of whatever shape, is mounted on a spindle having its journals mounted in bearings on a yoke forming part of an arm mounted to turn about a horizontal pivot. The spindle or tube rests on a roll driven by a drum which, as herein constructed, has a crossing groove to actuate a suitable traverse guide, the yarn going to the spindle being acted upon by a drop wire which co-operates with part of a stop motion and effects the lifting of the roll from the drum and the consequent stopping of rotation of the roll whenever the yarn breaks.

Prior to my invention I have described in United States Patent No. 404,831, granted June 11, 1889, a series of rotating cylinders upon which rest drums of the same diameter, said drums acting to rotate spools held between suitable spool holders so shaped as to let the journals of the spool carrying disks rise in a slot during the winding operation, the traverse of the thread being effected by a heart cam on a shaft in the upper part of the machine.

In this my present invention, the thread is wound upon a tube carried by a spindle having its bearings in a carrier or holder which is pivoted at a distance from the winding roll which rotates it, and the winding roll which is rotated by the drum has imparted to it many rotations to each rotation of the drum, and the drum is made the driving member of the thread laying finger or traverse mechanism.

Figure 1 is a partial cross sectional view of a sufficient portion of a spooling machine to illustrate my invention; Fig. 2, a detail showing in plan or top view a driving drum, roll and traverse device, and Fig. 3 is a detail to be referred to.

The frame work A is and may be as usual in spooling machines, it being of suitable shape to sustain the working parts.

The machine in practice will or may have at each side a suitable longitudinal shaft as *a*, provided at suitable distances apart with like drums *a'*, one for each spool, said drums having suitable crossing grooves *a²* in which enters a foot or shoe *b* of a traverse guide *b'* mounted to slide freely on a guide rod *b²*, suitable springs *b³* on the rod acting as buffers, as the traverse guide eye completes its stroke, the rotation of the drum rotating the roll 24 lying on it loosely, said roll having its journals mounted in open bearings of stands 25.

The frame-work has in practice a series of suitable stands *c*, upon each of which is pivoted, as at *c'*, a holder *c²* for the shank *c³* of a yoke or carrier *c⁴* having suitable bearings for the spindle *d*, on which will be slipped the tube or cone of paper or other material on which the yarn *y* taken from the spool *d⁴*, having its journals in bearings *d⁵* erected on a part of the frame-work, will be wound. Secured to the holder by a set screw *e'* is a spring catch *e*, the free end of which bears on and acts frictionally against the rounded surface at the top of the stand *c*, the extent of the friction being regulated by a set screw *e²*, and the greater the tension the harder the yarn will be wound on the cone or tube receiving the yarn. This spring catch also co-operates with a projection *e³*, the catch engaging the projection to hold up the yoke after it has been lifted by the operator and during the time that the operator is removing the spindle for the reception of a new tube or cone. When the operator again desires to resume work she will pull down on the yoke and overcome the spring catch. The shank *c³* of the yoke is confined in the holder by a set screw *e⁴*, such manner of connection permitting the yoke to be rotated more or less according to whether the yarn is to be wound on a conical or on a cylindrical tube.

I have provided the machine so far described with means to stop the rotation of the winding roll 24, whenever the yarn breaks. At each end of the drum *a'* I have located roll lifters *f*, shown as arms, connected to a lever *g* pivoted at *g'*, said lever having a cam surface 2 adapted to be acted upon by a leg *g²*

pivoted at g^3 on a bracket g^4 of the framework. The leg g^2 has pivoted upon it a leg lever h the outer end of which is normally elevated, as in Fig. 1. Each yarn y on its way to the spindle is passed through a suitable drop wire h' , one end of which is connected to a rock shaft h^2 . In case a yarn breaks, the drop wire will fall and acting on the leg lever h will turn it about its center of motion, lift its right hand or inner end and put it in the range of motion of the intermittingly rotating ratchet wheel m , on shaft m' , so that said ratchet striking the end of the said lever will move it longitudinally and carry with it the leg g^2 , and the latter acting on the cam surface of the lever g will turn it to elevate the lifting devices f and lift the roll 24 from contact with the drum, thus stopping the winding operation. Each drum has its own separate stop motion mechanism.

The lever g , the leg, the leg lever and ratchet wheel are common to my application, Serial No. 442,332, filed August 6, 1892, and the ratchet wheel and its shaft are common to my Patent No. 404,831, dated June 11, 1889.

This invention is not limited to the exact form of drop wire shown, and instead I may use any other equivalent form, and this is true as to the shape of the lever g and the devices to move it to actuate the roll lifting devices.

The bolt forming the pivot c' for the holder c^2 may by its nut c^3 be made to clamp the holder and stand more or less closely together so as to require more or less strain to lift the free end of the yoke in the process of winding.

The lever g may be grasped at its outer end by the operator and be moved to lift the roll 24 whenever desired.

I do not claim a wedge to act upon and lift the winding roll from contact with the drum, and I am also aware that in machines for winding yarn, where a great number of yarns are put upon a spool, the winding drum and an intermediate roll have been made to rotate the spool receiving the numerous strands of yarn.

My invention does not relate to a winding machine but rather to a spooling machine.

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

1. In a spooling machine, a rotating drum having a crossing groove a^2 ; a winding roll of much less diameter located directly above and normally resting upon the top of said drum to be rotated thereby many times during each rotation of the drum; a pivoted carrier; a spindle having its bearings in the free end thereto and adapted to receive a tube to be wound with yarn; and a traverse guide having a projection to enter the groove in said drum to reciprocate the traverse guide and cause it to lay the yarn from end to end of the tube on said spindle, combined with a lifting device, a drop wire, and intermediate de-

vices to positively operate the lifting device on the breakage of the yarn, to thus effect the lifting of the rapidly running winding roll from the drum having the crossing groove, substantially as described.

2. In a spooling machine, a rotating drum; a winding roll of much less diameter located directly above and normally resting upon the top of said drum to be rotated thereby many times during each rotation of the drum; a yoke pivoted at a distance from the said drum; a spindle having its bearings in the said yoke and adapted to receive a tube to be wound with yarn, combined with a lifting device composed of a pivoted lever g having upright arms f extended across the ends of the drum and shaped to partially embrace the drum shaft a ; and a drop wire, and intermediate devices, which, on the breaking of the yarn act to effect positively the movement of the lifting devices to lift the winding roll from contact with the drum, substantially as described.

3. In a spooling machine, a rotating drum having a crossing groove a^2 ; a winding roll of much less diameter located directly above and normally resting upon said drum and adapted to be rotated by it many times during each rotation of the drum; a thread-laying finger having a projection to enter said groove, the latter causing it to reciprocate the yarn longitudinally back and forth; a holder or carrier pivoted at one end at a distance from the axis of the drum and having one of its parts made to oscillate on the other part, the oscillating part having bearings for the spindle to receive a tube on which the yarn is to be wound, combined with a lifting device co-operating with the winding drum, a drop-wire, and devices actuated thereby and adapted to move the lifting device to lift the winding roll from the drum on the breakage of the yarn, substantially as described.

4. In a spooling machine the following instrumentalities, viz:—a rotating drum, a winding roll resting on and rotated by it; a yoke or carrier to sustain a tube or spindle to be filled with yarn; a lifting device to lift the winding roll from the surface of the drum; a leg lever, a pivoted support therefor, a drop wire to act upon said leg lever and turn the same upon the breaking of the thread, and an actuating device to strike said leg lever in its abnormal position, and during such operation turn the lifting device to effect the lifting of the winding roll from its driving drum and stop rotation of the tube or spindle being wound, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN W. FOSTER.

Witnesses:

A. E. DEAN,
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