July 9, 1940. J. T. CRANDALL 2,207,615

WINDING MACHINE

Filed Feb. 9, 1938 2 Sheets-Sheet 1

Fig. 3.

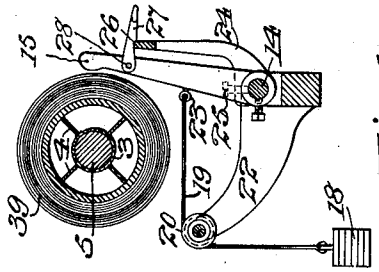


Fig. 5.

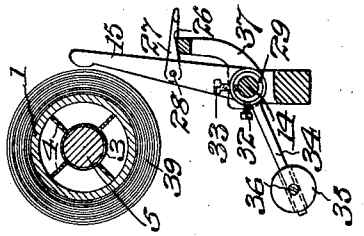


Fig. 2.

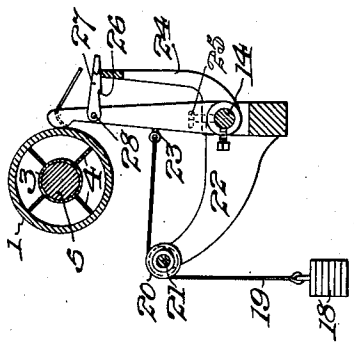


Fig. 4.

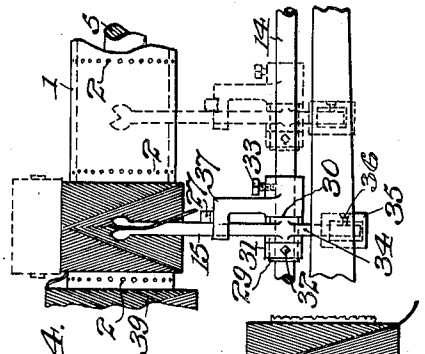


Fig. 6.

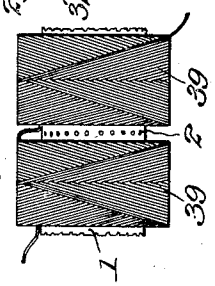
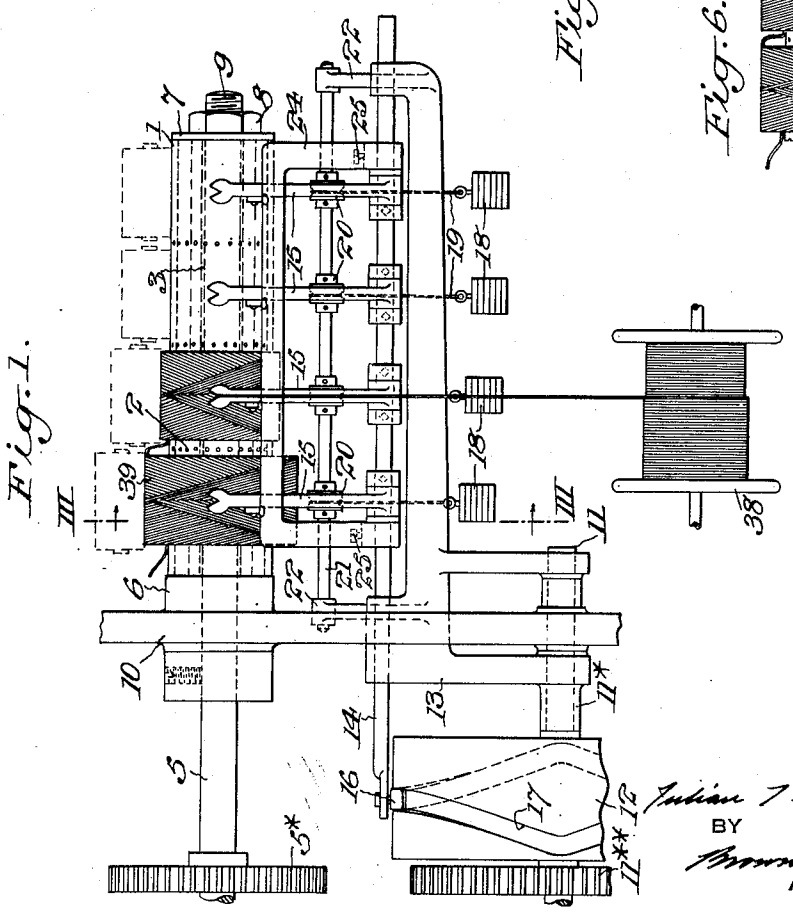


Fig. 1.



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WINDING MACHINE

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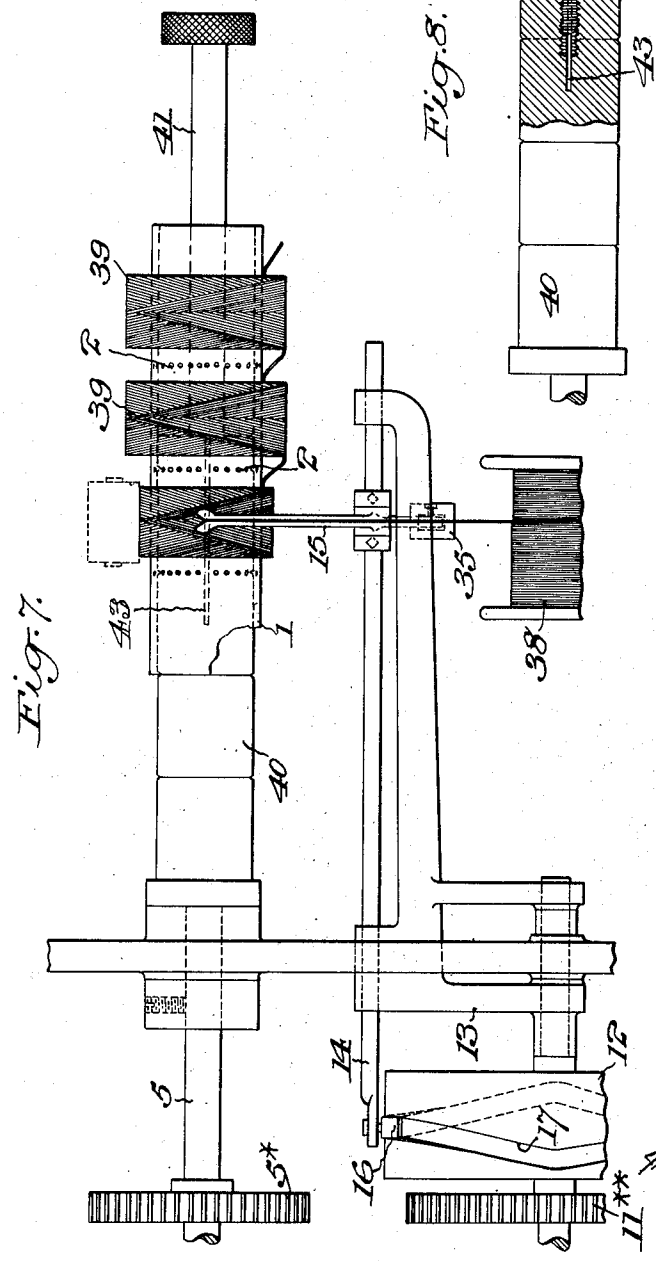


Fig. 7.

Fig. 8.

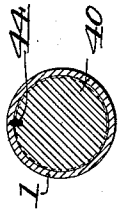


Fig. 10.

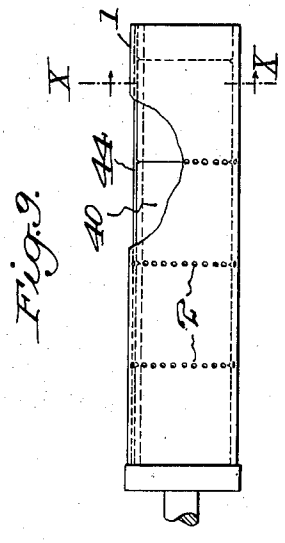


Fig. 9.

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UNITED STATES PATENT OFFICE

2,207,615

WINDING MACHINE

Julian T. Crandall, Ashaway, R. I., assignor to Ashaway Line & Twine Manufacturing Company, Ashaway, R. I., a corporation of Rhode Island

Application February 9, 1938, Serial No. 189,561

4 Claims. (Cl. 242—18)

The object of my invention is to provide a winding machine in which packages of fishline, twine, thread, ribbon, or the like, may be progressively wound on adjacent core sections of a single core by means of a plurality of guides spaced along a traverse bar, or by a single guide carried on said bar.

A further object of my invention is to provide means for locking a guide out of frictional contact with the core, or completed package, in an inoperative position in order to prevent wear on the core, or package, during the winding of subsequent packages.

My invention comprises, generally, a rotary core support, a reciprocating traverse bar, a core removably held on said core support, as a tube circumferentially weakened at predetermined intervals, a plurality of line guides, or a single guide on said traverse bar for use in winding successive packages, and a line supply, said guides or guide being positioned to lead the line from the supply to successive core sections.

Practical embodiments of my invention are shown in the accompanying drawings, in which:

Fig. 1 represents a front elevation of so much of a winding machine as will give an understanding of my invention, in which a plurality of guides are mounted along a traverse bar to progressively wind a separable multiple package unit, shown herein as partially wound;

Fig. 2 represents a transverse vertical section of a portion of my invention in which the parts are shown in operative position to begin the winding of a package;

Fig. 3 represents a transverse vertical section taken in the plane of the line III—III of Fig. 1, looking in the direction of the arrows, with the guide locked out of frictional contact with the completed package in an inoperative position;

Fig. 4 represents a detail front elevation of a portion of another embodiment of my invention in which a single guide is mounted on a sleeve, said sleeve being adjustably mounted along the traverse bar;

Fig. 5 represents a transverse vertical section of the embodiment shown in Fig. 4, and shows the guide locked out of frictional contact with the completed package;

Fig. 6 represents an elevation of two packages separated from a completed multiple package unit;

Fig. 7 represents a front elevation of another form of my invention in which manual means for presenting successive core sections in position for progressively winding packages thereon by the use of a single guide is shown;

Fig. 8 represents a detail front elevation, partly in section, of a means used to adjustably hold the core on the rotary core support;

Fig. 9 represents a detail front elevation, partly broken away, of another means of holding the core on the rotary core support; and

Fig. 10 represents a transverse vertical section of the core holding means shown in Fig. 9, taken on the line X—X of Fig. 9, looking in the direction of the arrows.

A hollow core 1, in the present instance a cylindrical tube being weakened circumferentially at predetermined intervals as by perforations 2, is removably held on a rotary tube support, as a sleeve 3, having radially projecting wings 4, said support being fixed on shaft 5.

Tube 1 is removably held on said support between a collar 6 on shaft 5 and a washer 7 held in contact with tube 1 by means of a lock nut 8 adapted to receive the thread of screw 9 which is formed integral with an end of shaft 5.

Shaft 5 is rotatably supported in frame 10 and may be driven by any well known or approved means, such as a gear 5*.

Also rotatably supported in frame 10 is a shaft 11 on which a traverse cam 12 is mounted, said shaft 11 being driven in any well known or approved manner, as, for instance, by the gear 11**.

A frame 13 is mounted on casing 11* of shaft 11, said frame being adapted to slidably support and guide a traverse bar 14.

In the embodiment shown in Fig. 1, a plurality of guides 15 are carried by and swingably mounted on traverse bar 14, said traverse bar being actuated by the travel of a stud or roller 16 affixed thereto as said stud or roller travels in the endless groove 17 of traverse cam 12.

Frictional contact of the guides 15 with their respective packages is maintained by means of a tension device, in the present instance, weights 18 suspended on lines 19 led over pulleys 20. Said pulleys 20 are mounted to rotate on rod 21 which is supported in arms 22 of frame 13. Said lines 19 are attached at the other ends thereof to eyes 23 on the guides 15.

Means for locking the guides 15 out of contact either with the completed package or the core in an inoperative position includes a bracket 24 carried by traverse bar 14, and fixed thereon by means of set screws 25. Said bracket is located to engage notches 26 in latch levers 27 pivoted at 28 on guides 15 to lock said guides.

In the form shown in Fig. 4, a single guide 15 is swingably mounted on a sleeve 29 between a shoulder 30 on said sleeve and a collar 31, said collar being fastened to said sleeve by means of a set screw 32. Sleeve 29 is adjustably fastened along traverse bar 14 by a set screw 33.

Means for maintaining the guide 15 in frictional contact with the package comprises, in this embodiment, an arm 34 affixed at an angle to guide 15 and carrying a counterbalance, as an adjustable weight 35, held thereon by means of set screw 36. The increase in diameter of the package causes the leverage on arm 34 to increase as weight 35 is caused to swing upwardly as the guide 15 is forced outwardly, thus constantly increasing the pressure of the guide on the package.

Means for locking the guide out of frictional contact with the core or package comprises, in this instance, a bent arm 37 carried by sleeve 29, and located to engage the notch 26 in latch lever 27 pivoted at 28 on guide 15.

A single feed supply roll 38 is mounted in any well known or approved manner, and the line or other material is led therefrom to a guide 15.

To produce a progressively wound separable multiple package unit according to Fig. 1, the operation is as follows:

Lock nut 8 is unscrewed, washer 7 removed, and the perforated tube 1 is slipped over the tube support until one end abuts against collar 6. Washer 7 is replaced and nut 8 screwed on until washer 7 abuts against the other end of tube 1. The line or other material is then led from the supply roll 38 to and through a guide 15, then to and around an end section of perforated core 1. The remaining guides are locked out of frictional contact with the core. Shafts 5 and 11 are then driven to rotate core 1 fixed on the tube support carried by shaft 5, and to actuate traverse bar 14 respectively, said traverse bar 14 being actuated by the travel of stud or roller 16, affixed thereto, in the endless groove 17 of traverse cam 12 which is fastened on shaft 11.

The winding operation is continued until a package containing a desired length of line or other material is completed, as 39.

The guide 15 is then locked out of frictional contact with the package and the line or other material is removed from the locked guide and led to and through the next successive guide which is then unlocked. The winding operation is repeated to produce another package on a core section adjacent the first until the number of packages desired in a unit has been wound.

When the form shown in Fig. 4 is used, the operation for winding the first package is similar to that described above for the form shown in Fig. 1.

Where it is desired to wind the next package, the guide 15 may be locked at the limit of its outward movement. Set screw 33 is then loosened and the sleeve 29 carrying the guide 15 and its locking means is moved laterally along the traverse bar into position for winding the next package. Set screw 33 is tightened to hold the apparatus in its proper position on the traverse bar and the guide is unlocked.

The frictional pressure of the guide 15 on the core, or package, may be varied by changing the amount of weight used on the form shown in Fig. 1, or by adjusting the weight used as a counterbalance shown in Figs. 4 and 5.

When a unit has been completed, the winding operation is stopped and the line or other material leading from the supply thereof is severed. Nut 8 is unscrewed and washer 7 removed to allow core 1 and the progressively wound packages thereon to be removed as a unit.

When the form shown in Fig. 7 is used, the core 1 is removably held on the core support by manually operable means for presenting successive core sections in position for progressively winding packages thereon by the use of a single guide. Said means may comprise a spindle 40 adapted to be expanded at its outer end into contact with the inner surface of said tube 1 to hold the same thereon, as by forcing the tapered shoulder of screw 41 into the slot 42 of said spindle 40, which spindle is slit longitudinally at 43.

In the form shown in Figs. 9 and 10, the spindle 40 carries a longitudinally disposed blade 44 adapted to engage the inner surface of the core 1 to hold the core thereon.

In the embodiments shown in Figs. 7, 8, 9 and 10, a package is wound on the outer end of the core and the core is then manually slid outwardly along the spindle until the next succeeding core section is in position to have the package wound thereon.

This operation is repeated until the desired number of packages have been progressively wound when they may be removed as a unit.

The embodiments shown and described but not claimed herein form the subject matter of my divisional applications filed July 6, 1938, Serial Nos. 217,691 and 217,692.

It is evident that various changes may be made in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention and, hence, I do not intend to limit myself to the particular embodiments herein shown and described.

What I claim is:

1. In a winding machine, means for winding a multiple package unit comprising a rotary core support, a reciprocating traverse bar, a core removably held on said core support, a plurality of line guides mounted along said traverse bar and so positioned with respect to the core support that the line is led directly from the line guide to the core, means for supplying a single line, each of said guides being provided with an open recess for the line so that the line may be shifted to the next successive guide at the conclusion of the winding of each package without breaking the line.

2. In a winding machine, means for winding a multiple package unit comprising a rotary core support, a reciprocating traverse bar, a core removably held on said core support, a plurality of line guides mounted along said traverse bar and so positioned with respect to the core support that the line is led directly from the line guide to the core, means for supplying a single line, each of said guides being provided with an open recess for the line so that the line may be shifted to the next successive guide at the conclusion of the winding of each package without breaking the line, and means for holding the guide in yielding frictional contact with the package during the winding thereof.

3. In a winding machine, means for winding a multiple package unit comprising a rotary core support, a reciprocating traverse bar, a core removably held on said core support, a plurality of line guides mounted along said traverse bar and so positioned with respect to the core support

that the line is led directly from the line guide to the core, means for supplying a single line, each of said guides being provided with an open recess for the line so that the line may be shifted to the next successive guide at the conclusion of the winding of each package without breaking the line, and means for locking the guides out of contact with the core or finished package.

4. In a winding machine, means for winding a multiple package unit comprising a rotary tube support, a reciprocating traverse bar, a tube circumferentially weakened at predetermined intervals and removably held on said tube support, a plurality of line guides mounted along said traverse bar and so positioned with respect to the tube support that the line is led directly from the line guide to the tube, means for supplying a single line, each of said guides being provided with an open recess for the line so that the line may be shifted to the next successive guide at the conclusion of the winding of each package without breaking the line.

JULIAN T. CRANDALL.