March 6, 1945. W. SIEGENTHALER 2,370,922

DEVICE FOR UNREELING THE STRAND MATERIAL IN WINDING MACHINES

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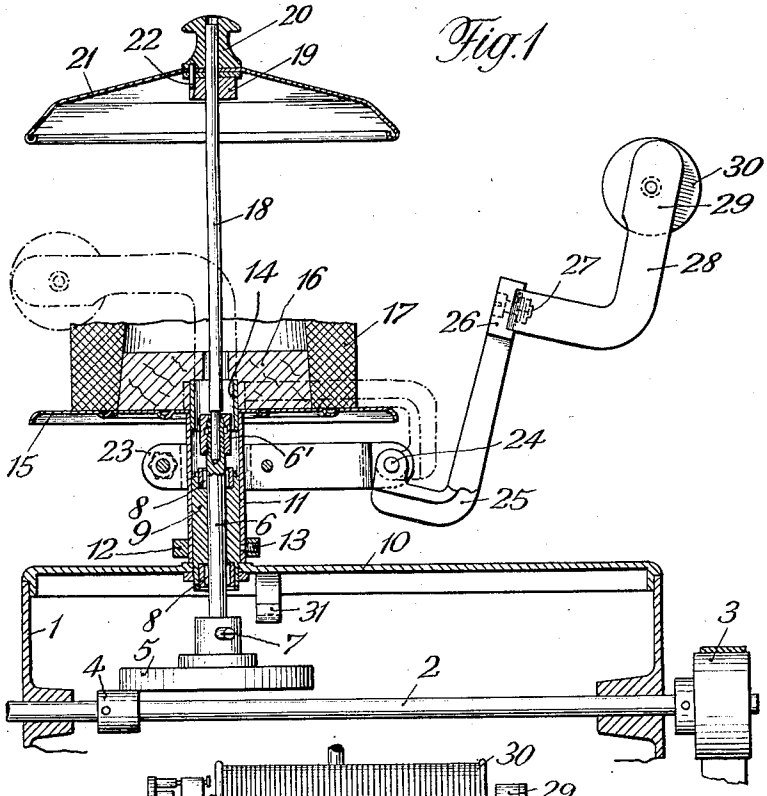


Fig. 1

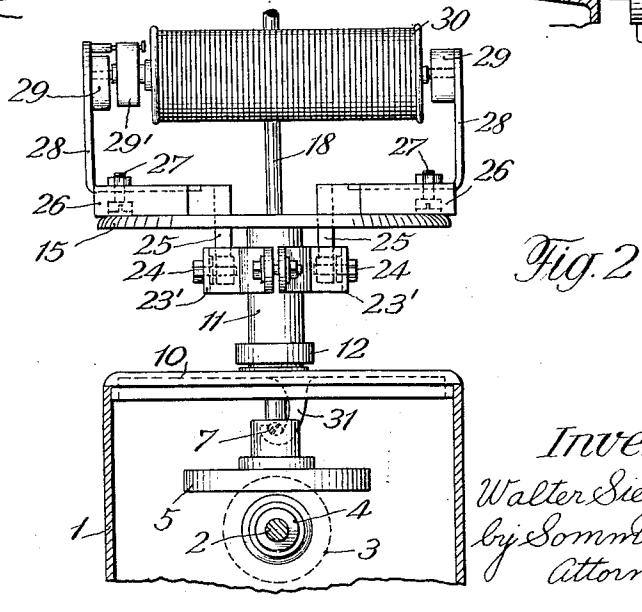


Fig. 2

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Fig. 3

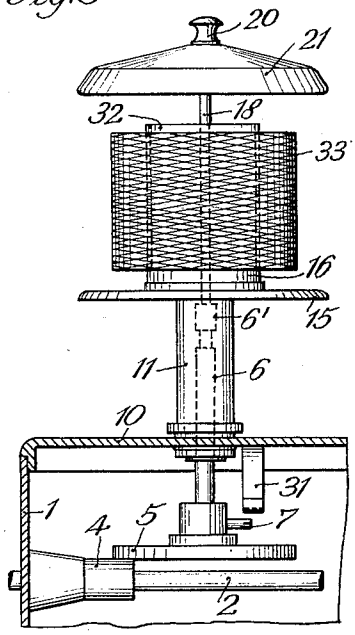


Fig. 4

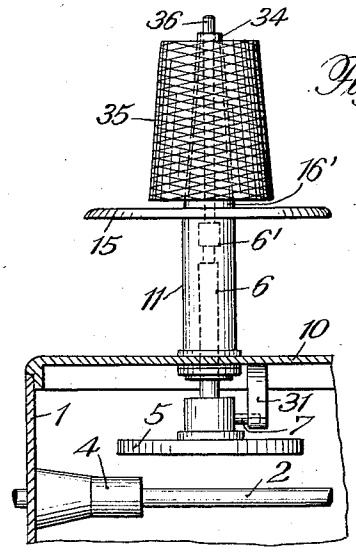


Fig. 5

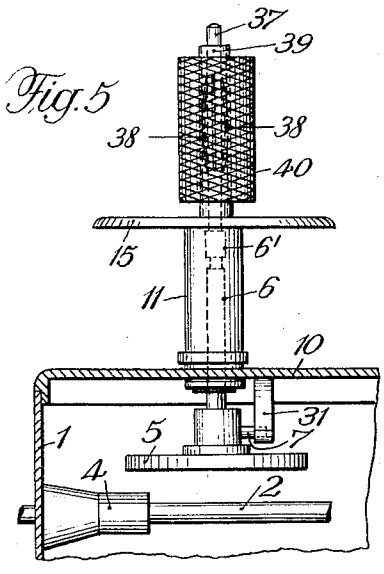
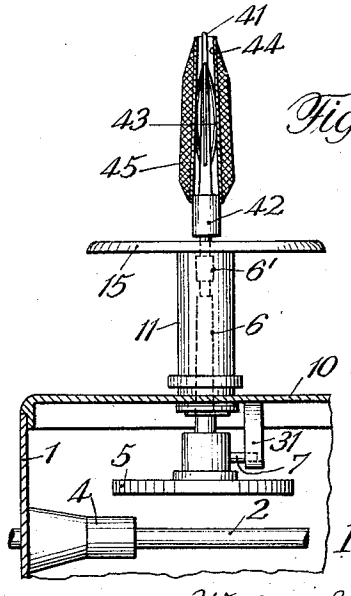


Fig. 6



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DEVICE FOR UNREELING THE STRAND MATERIAL IN WINDING MACHINES

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Application September 17, 1942, Serial No. 458,676
In Switzerland July 11, 1941

3 Claims. (Cl. 242—128)

This invention relates to devices for unreeling the strand material, such as thread or the like, in winding machines.

The thread unreeling device for winding machines according to this invention is distinguished in that each individual unreeling unit is adapted for unreeling thread packages of various forms, selectively at will, in the respective unit.

Consequently the formerly unavoidable requirement for installing a different carrier or unreeling frame for each different kind of thread package is now dispensed with. Due to this fact the construction of the unreeling device is considerably simplified so that amongst others the advantage is obtained that the unreeling operation can be more readily observed.

Several embodiments of the invention and modifications of details are illustratively exemplified in the accompanying drawings, in which

Fig. 1 shows a sectional elevation of a first embodiment in which two kinds of holding means for the thread package are arranged in the package carrier frame;

Fig. 2 is an elevation as seen at right angles to the elevation shown in Fig. 1;

Fig. 3 is a sectional view of a second embodiment including only one kind of holding means, and

Figs. 4 to 6 each show a thread package of different form to be in donned position in the same package carrier frame.

In the embodiment shown in Figs. 1 and 2, the gear box of a winding machine is designated by 1. The numeral 2 refers to a main driving shaft which passes through the gear box and is provided with a driving disc 3. The other driving parts required for the winding operation have been omitted as not necessary for the understanding of the invention. The rotational movement of the horizontal main driving shaft 2 is transmitted to a vertical spindle 6 through a friction gear drive 4, 5 (Fig. 1) to which the friction disc 5 is secured by means of a screw stud 7.

The vertical spindle 6 is mounted by means of two needle bearings 8 in a sleeve 9 the lower end of which is inserted in the cover 10 of the gear box 1 and is fastened to said cover. The remaining length of the sleeve 9 is accommodated in a supporting tube 11 the lower end of which is provided with a collar 12 having a set screw 13 by which means the supporting tube 11 and the sleeve 9 are firmly connected to each other. In the open upper part of the supporting tube 11 a carrier plate 15 is inserted, by means of a central pipe stud 14, and is provided with a mediate projection 16 which is advantageously removably arranged. In Fig. 1 it is assumed that the carrier plate 15 supports a spun cake 17 of artificial silk, as schematically indicated.

In a bore provided in the upper end portion of the vertical shaft 6 a spindle 18 is inserted. This end of the vertical shaft 6 is provided with a longitudinal recess permitting the spindle 18 to be firmly clamped to the vertical shaft 6 by means of a nut 6' which cooperates by means of an inner conical face with a mating face of the shaft 6. By this means the rotational movement of the shaft 6 is transmitted to the spindle 18. The upper end portion of the spindle 18 is provided with a mounting piece 19 for the central portion 20 of a dished guide disc 21. The portion 20 is provided with a pin 22 for interengagement with a groove in the mounting piece 19, for the purpose of obtaining common rotation for the disc 21 and the spindle 18.

In the operation of the winding machine for unwinding a cake-type of package the friction gear drive 4, 5 rotates the vertical shaft 6 continually, and the latter drives in turn the spindle 18 together with the disc 21. The thread being unwound from cake 17 passes upwardly along the periphery of the disc 21 which serves as a circular guide-way for the thread. Due to the rotation of the guide disc 21, the unreeling of the thread from this cake 17 and the conveyance thereof to the winding spindle of the winding machine is facilitated.

When the thread package to be unwound is of the spool type it is mounted for unwinding in a different mounting adapted to be swung into position for cooperation with the thread guide 21. Since the spool requires no power driven unwinding guide mechanism, the drive mechanism for the guide which is used when a package of another type is to be unwound, is disconnected.

The tube 11 in which the carrier plate 15 for the thread to be unreeled is inserted has secured to it a shackle 23 on two projecting arms 23' of which having bent up ends two levers 25 are mounted by means of threaded bolts 24 passing through said ends. On an angular piece 26 on each of these levers 25 is connected by means of a screw bolt 27 an angular supporting arm 28 the upstanding leg of which is provided with a mounting plate 29.

In the mounting plates 29 on the two supporting arms 28 a flanged spool 30 is journalled from which the thread passes to the winding spindle

of the winding machine. From this flanged spool 30 the thread can be unwound if the carrier plate 15 is devoid of a thread package. For this purpose the pair of levers 28 can be rocked from the full line inoperative position into the chain-dotted position shown in Fig. 1 in which the pair of levers 28 rests on the carrier plate 15.

In Fig. 2 the unreeling device is shown in full lines in position of operation. This figure shows one of the mounting plates 29 to be provided with a band brake 29' for the spool 30, and the drive of the vertical shaft 6 and thus that of the spindle 18 to be disconnected, due to the shaft 6, after having been accordingly pushed upward, had entered, by means of the stud 7, into engagement with a hook 31 which is arranged on the underside of the cover 19. By unhooking the stud 7 from the hook 31 the vertical shaft 6 can be operatively connected with the friction disc 4 by means of its associated disc 5 whenever the vertical shaft 6 is to be driven again. The proportions or size of the arm 28 and of shackle 23 are such that when the arm is swung to operative position for unwinding a spool type package the spool 30 will be substantially beneath the edge of guide 21 so as to pass upwardly from the spool against the guide without difficulty.

The two levers 28 may naturally be rigidly connected to each other into the form of a stirrup.

Fig. 3 shows an embodiment of the invention in which the projection 16 of the carrier plate 15 has pushed thereon a cylindrical spool body 32 which carries a thread package 33 of artificial silk in the form of a cross wind. The friction gear drive 4, 5 is connected.

In Fig. 4 a conical spool body 34 is inserted in the projection 6 of the carrier disc 15 and is shown to carry a thread package 35 which also has a conical form. Further the spool body 34 is inserted in the vertical shaft 6 by means of a central spindle 36. The thread of the conical cross wind 35 can conveniently be unwound over the tip thereof so that the arrangement of a guide disc or the like for the unwinding thread can be dispensed with. The friction gear drive is shown to be disconnected in this case.

Fig. 5 shows a spindle 37 to be inserted in the vertical shaft 5 which holds a cylindrical sleeve 39 carrying a thread package 40, also having a cylindrical form, by spring arms 38.

In Fig. 6 a spindle 41 is shown to be inserted in the vertical shaft 6, this spindle having a conical thickening 42 and spring arms 43 on which parts a conical sleeve 44 carrying a coplike thread package 45 is arranged.

In the last two modifications the friction gear drive 4, 5 is disconnected. If the spindles 37 or 41 are provided with a guide disc and the gearing 4, 5 is connected the result is obtained that during the operation of the winding machine the said guide disc is rotated, thereby facilitating the unreeling of the thread from the packages 40 or 45 respectively.

It will be readily seen that the different unreeling devices as illustrated in Figs. 3 to 6 for various thread packages can be interchanged without any further provisions. The unreeling device is so arranged that it can be attended from the front side of the machine. Instead of a carrier plate 15 in the tube 11, another thread package carrier member can be immediately inserted.

Due to the provision of a releasable driving arrangement for the thread unreeling device in the gear box of the winding machine the build of the machine is simplified. Since the driving arrangement of the unreeling device is associated with the driving means of the machine the attendance is simplified. Apart from this the housing of the driving arrangement in the gear box protects this arrangement against the access of fluff and other foreign matter.

Other control means for the driving arrangement than a hook connected to the gear box cover may be provided.

I claim:

1. In mechanism for unwinding thread packages of different types, a support for a package winding of one type, a thread guide spaced from the support and having a guide edge substantially circular to conform to the shape and size of the periphery of the package, power means for rotating said guide to assist in the unwinding operation, means for disconnecting the guide from said power means, a further support for another type of thread wound package, and means for mounting said further support and the package carried thereby in such position adjacent the thread guide that thread being unwound therefrom can pass against the guiding edge.

2. Thread unwinding mechanism as claimed in claim 1, and in which the means for disconnecting the power drive means includes an axially slidable driving spindle, a frictional drive element on said spindle, and a latch for holding said frictional drive element out of driving position when the spindle is slid axially to non-driving position.

3. Thread unwinding mechanism as claimed in claim 1 and in which the further support for the latter type of package comprises a frame, a sleeve fixed on said frame and extending upwardly therefrom, said sleeve housing the rotatable spindle, a bracket mounted on said sleeve, an arm pivoted on said bracket and adapted to be swung to a position over the first support, and means on said arm for supporting said latter type of wound thread package in position to deliver thread to the thread guide.

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