

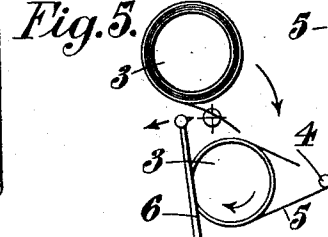
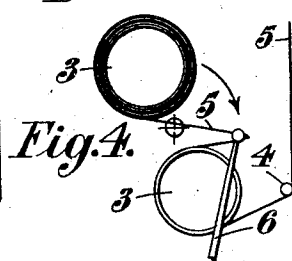
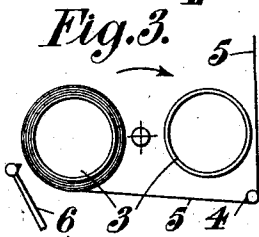
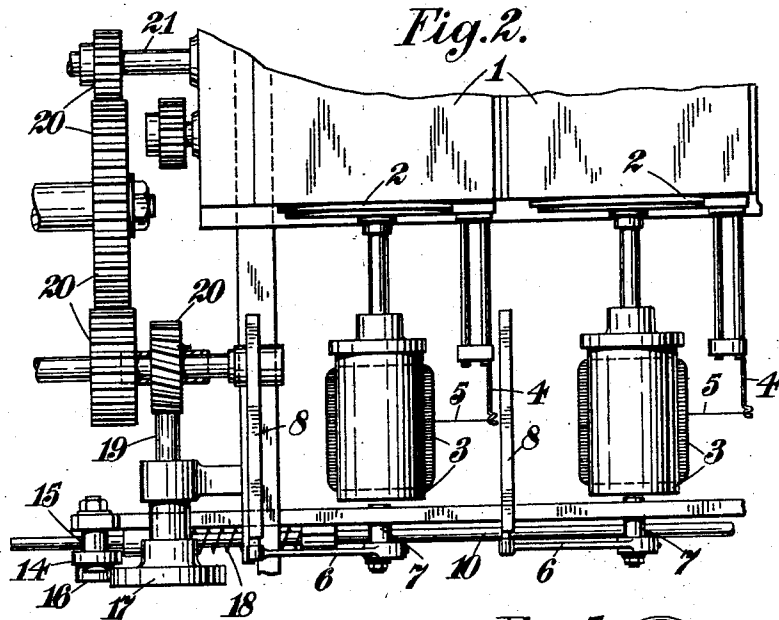
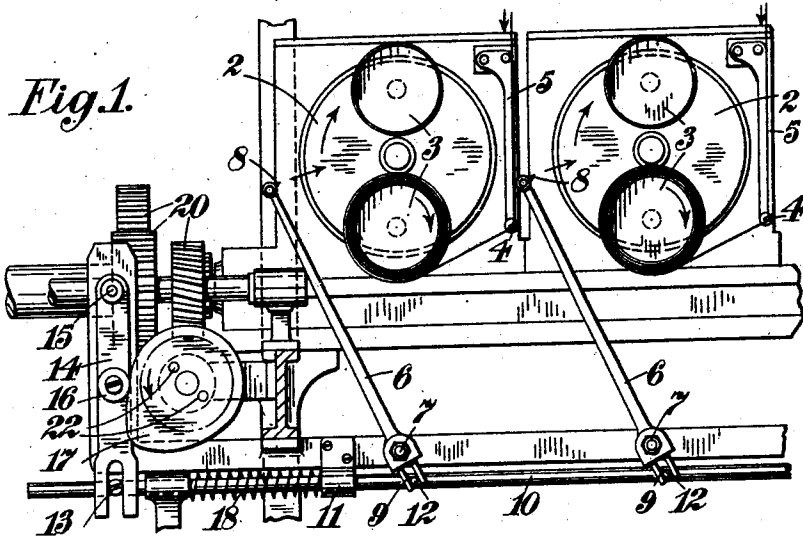
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WINDING APPARATUS FOR THREAD OR THE LIKE

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WINDING APPARATUS FOR THREAD OR THE LIKE

Application filed November 12, 1928, Serial No. 318,946, and in Great Britain August 18, 1928.

This invention is for improvements in or relating to winding apparatus for thread or the like, and particularly relates to the kind of apparatus which comprises a reel-carrier which is periodically moved so as to bring an empty reel into a winding position and so as to move a wound reel out of the winding position.

According to this invention, a winding apparatus of the kind described is characterized in that means are provided for automatically severing the thread leading to a full reel during or after the movement of an empty reel into the winding position, said means being so arranged as to permit or cause the severed free end of the supply to come into engagement with the empty reel. With this arrangement, the thread may be continuously fed to the winding apparatus.

A winding apparatus as above described, and in which the empty bobbin is moved into contact with the thread between the thread-guide and full bobbin in its movement into a feeding position, is characterized in that the severing and thread moving means comprise a knife-blade which is arranged to move transversely in relation to the thread between the said reels and in such a direction as to wrap the severed thread around, or partly around, the empty reel.

One form of winding apparatus according to this invention comprises a rotatable reel-carrier, two rotatable reels thereon, means for periodically rotating said carrier so as to bring an empty reel into a winding position; a thread-guide situated beyond the path of movement of the said reels, a movable knife situated on the opposite side of the axis of rotation of said carrier to that of the thread-guide, means for so automatically moving said knife synchronously with said reel-carrier as to sever the thread between the empty and full reels and to wrap it around or partly around said empty reel when the latter has reached or is about to reach the winding position. The said knife is preferably carried by a lever-arm which is mounted to swing about an axis so situated that the arc of travel of the knife extends between the two reels. The lever-arm may be connected to a

bar which is longitudinally reciprocated by a cam, which cam is rotated in synchronism with the said reel-carrier.

Other features of the invention consist in moving the knife at a linear speed greater than the peripheral linear speed of the empty reel and the provision of means for adjusting the relative timing of the movement of the reel-carrier and the knife.

The following is a description of one form of winding apparatus according to this invention.

Reference is made to the accompanying drawings in which:

Figure 1 is a side elevation of the apparatus,

Figure 2 is a plan of Figure 1,

Figure 3 is a diagrammatic view of the relative positions of the thread guide, reels, thread and knife during the movement of a full reel out of the winding position before the thread is cut.

Figure 4 is a similar view of Figure 3 but with the knife in a position about to cut the thread.

Figure 5 the knife returning to its inoperative position after having cut the thread and having wrapped the free end round the empty bobbin.

The apparatus is arranged for winding artificial silk. The threads are led out from a spinning-box 1 through a number of outlets. Situated beneath each outlet is a winding apparatus comprising a rotatable reel-carrier 2 on which are mounted two rotatable reels 3. The axes of rotation of the above parts are arranged horizontally. During the winding operation, the carrier is stationary and is so disposed that the reels are arranged one above the other (as shown in Figure 1). In this position, the lower reel is in a winding position and is rotated through suitable gearing (not shown) while the upper reel is free. A thread-guide 4 is mounted on a fixed part of the machine out of the path of movement of the reels and is approximately at the same level as the axis of rotation of the lower reel, when the latter is in a winding position. The thread 5 passes through the thread-guide on to the lower reel. When the reel is full, the

carrier is automatically rotated so as to reverse the positions of the two reels, whereupon the empty bobbin is caused to be rotated while the full bobbin is no longer driven.

The above arrangement is already known, and the invention consists in applying to such a construction means for automatically severing the thread when a full bobbin has been rotated to the upper position. A lever-arm 6 is provided for each winding apparatus and is mounted on a pivot 7 which is secured to a fixed part of the machine. The axis of each pivot is horizontal and is disposed vertically beneath the axis of rotation of the respective reel-carrier. Each lever-arm extends upwardly and carries at its upper extremity a horizontally disposed knife-blade 8. The knife-blade is of such a length as to extend along the whole length of the reel. The length of each lever-arm is such that the knife-blade can be swung between the two reels when they are substantially one above the other. The lower end of each lever-arm extends beyond the pivot and is provided with a fork-piece 9. A bar 10 is so slidably mounted in bearings 11 in the frame of the machine as to extend at one side of each of the said fork-pieces. Stud 12 are secured to the bar and engage the said fork-pieces. At one end of the bar is secured a pin 13 with which engages a forked link 14. The link is suspended from a fixed pivot 15 and carries a roller 16. The roller engages the periphery of a cam 17. The rotation of the cam causes the said bar to be reciprocated, whereby the lever-arms and knives are swung backwards and forwards between the reels. A helical spring 18 is threaded on the said bar to which it is fixed at one end. The other end is fixed to the framework of the machine. The said spring maintains the roller and cam in contact. The cam is mounted on a shaft 19 which is connected through gearing 20 to the shaft 21 which drives the aforementioned carriers. The cam is rotatably adjustable on its shaft and is fixed in any required position by set-screws 22. The gear ratio between the reel carrier and the cam is such that the cam rotates twice for every one revolution of the reel carrier. The relative distances of the knife and the fork-pieces from the pivots are such that the linear speed given to the knife is greater than the peripheral linear speed of the driven reel in the winding position. The cam is so adjusted that the knife is swung towards the thread when the full bobbin has reached, or is about to reach, its upper position.

We claim:

For a winding apparatus of the character described having an intermittently movable carrier for a plurality of reels on which thread is to be wound in succession, a thread severing mechanism comprising in combi-

nation a fixedly pivoted lever arm, a knife secured at one end thereof, which lever arm is arranged so that the arc of movement of the knife extends between an empty and full reel, a cam for moving said lever arm, gearing for connecting the cam to the reel carrier, which gearing is timed so as to move the knife to cut the thread when a full reel is moved out of the winding position.

In testimony whereof we have signed our names to this specification.

SAMUEL WILD.

ERNEST HUGENTOBLE.

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