

July 10, 1934.

J. O. McKEAN

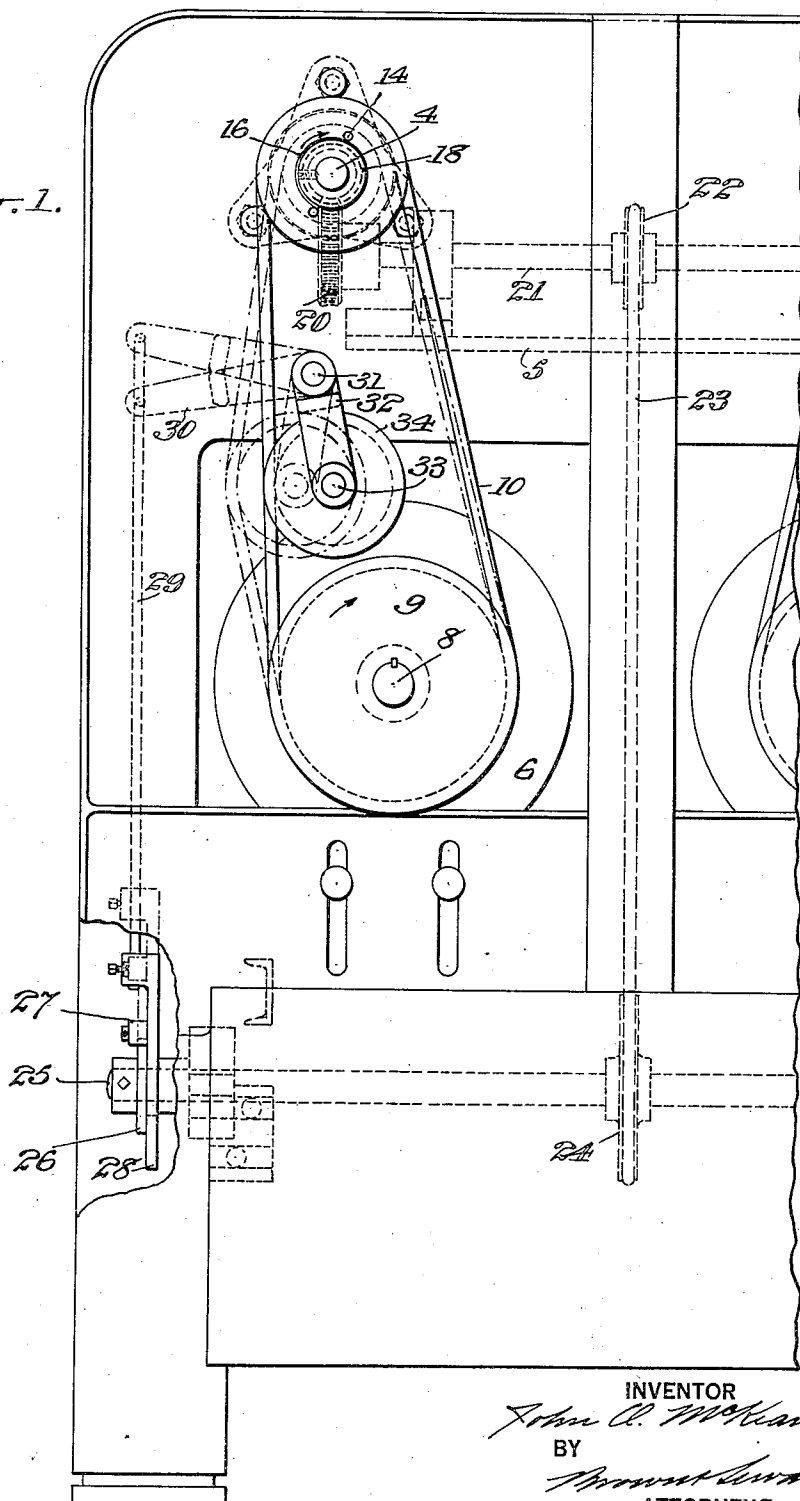
1,966,259

PACKAGE WINDING MACHINE

Filed March 15, 1933

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Fig. 1.



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Fig. 2.

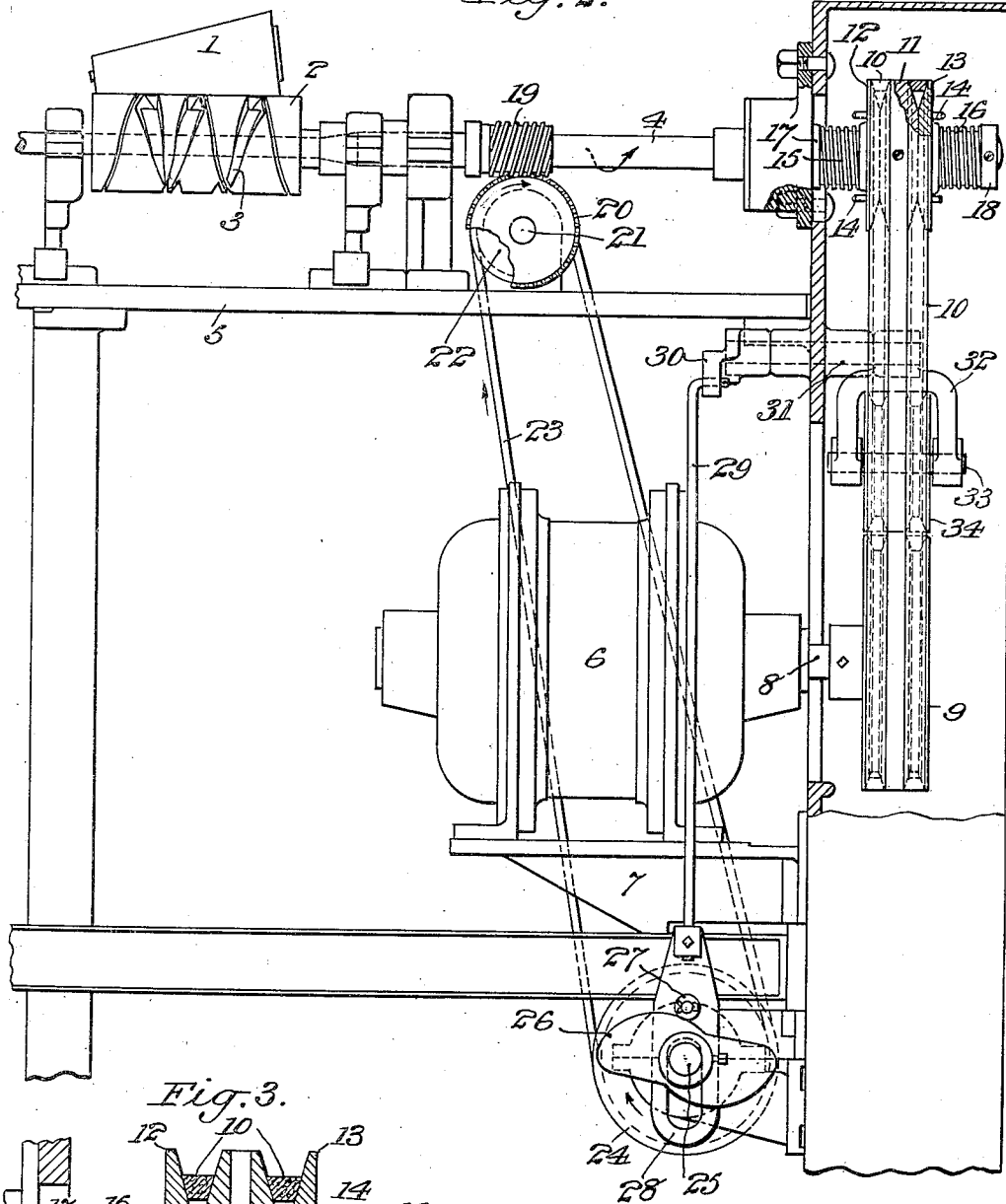
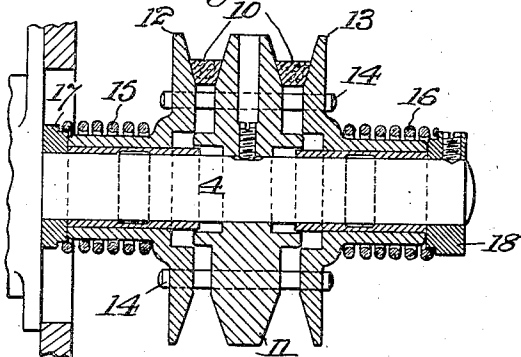


Fig. 3.



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UNITED STATES PATENT OFFICE

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PACKAGE WINDING MACHINE

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Application March 15, 1933, Serial No. 660,787

9 Claims. (Cl. 242—18)

This invention is directed to package winding machines of that type in which the package is wound by its frictional surface contact with a combined yarn traversing and package driving roll.

The object of my invention is to provide a novel and simple package winding mechanism which will effectually break up the ribbon wind on the package, i. e., the tendency of the yarn to lay one turn upon a preceding turn, thereby causing undesirable lumps or protuberances to be produced in the wound package.

My invention comprises particularly a belt driven expansible pulley located on the shaft of the combined yarn traversing and package driving roll; means being provided for increasing the tension on the belt at intervals, to expand the pulley and thereby increase its speed by decreasing its effective diameter.

A practical embodiment of my invention is represented in the accompanying drawings, in which:

Fig. 1 represents a detail end view of a package winding machine with my improved anti-ribbon winding mechanism applied thereto;

Fig. 2 represents a detail side view of the same, partly in section; and

Fig. 3 represents a detail section showing the expansible pulley in its expanded position.

The package being wound is denoted by 1, which package may be supported by a holder, not shown herein, of any well known or approved form. This package 1 is driven by its frictional surface contact with the periphery of a combined yarn traversing and package driving roll 2 of the type shown, described and claimed in my copending application filed January 27, 1933, Serial No. 653,775, in which the roll has a plurality of yarn engaging grooves 3, arranged in non-intersecting oppositely disposed helices. The shaft 4 of this roll is mounted in suitable bearings on the machine frame 5.

The means which I have shown for imparting a variable speed to the combined yarn traversing and package driving roll 2 is shown as comprising the following elements:

A motor 6 mounted on a suitable bracket 7 of the machine frame 5 has its shaft 8 provided with a double driving pulley 9, belts 10 serving to connect this pulley 9 with a double expansible pulley carried by the roll shaft 4.

In the present instance this double expansible pulley is shown as comprising an intermediate member 11 fast on the roll shaft 4 and two movable members 12 and 13 slidably mounted on the

shaft and interlocked with the intermediate member 11, as for instance by the pins 14. Coil springs 15 and 16 interposed between their respective movable members 12 and 13 and collars 17 and 18 fast on the roll shaft 4, serve to urge the movable members toward the intermediate member 11 of the expansible pulley.

The roll shaft 4 is provided with a worm 19 engaging a worm gear 20 carried by a cross shaft 21 mounted in suitable bearings on the machine frame, which cross shaft also carries a pulley 22 which is connected by a belt 23 with a pulley 24 carried by a cam shaft 25 also mounted in suitable bearings on the machine frame 5.

This cam shaft 25 is shown as provided with a cam 26 which engages a roller 27 carried by a vertically slidable follower 28 to which the lower end of a vertically disposed connecting rod 29 is attached, the upper end of said rod being attached to an arm 30 of a rock shaft 31 mounted in suitable bearings in the machine frame 5. This rock shaft 31 also carries a yoke 32 provided with a cross shaft 33 on which is mounted a double pulley 34 arranged, when swung outwardly, to act on the belts 10 for increasing the tension thereon at intervals, to expand the pulley on the roll shaft 4 to bring the belts 10 closer to the axis of the roll shaft 4 and thereby speed up the said shaft and its combined yarn traversing and package driving roll 2.

This follower actuating cam 26 is provided with gradual and abrupt faces successively engaging the follower roller 27 so that the yarn traversing and package driving roll 2 is speeded up more rapidly than it is slowed down. In the present instance this cam 26 is shown as having two lobes, each provided with an abrupt and a gradual face.

Owing to the changes of rotative speed of the yarn traversing and package driving roll, the package 1, having a certain amount of momentum of its own, will slip upon the roll 2 as the roll speeds up rapidly, thus breaking up the winding of one strand of yarn directly upon another strand of yarn or what is commonly known as the ribbon wind.

It is evident that various changes may be resorted to 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 be limited to the particular embodiment herein shown and described, but

What I claim is:

1. In a package winding machine, a combined yarn traversing and package driving roll, its shaft, and means for imparting a variable speed to the

roll shaft, comprising an expansible pulley on the roll shaft, a pulley driving belt and means for increasing the tension on the belt at intervals, to cause it to expand the pulley.

- 5 2. In a package winding machine, a combined yarn traversing and package driving roll, its shaft, and means for imparting a variable speed to the roll shaft, comprising an expansible pulley on the roll shaft, a pulley driving belt and means
10 operated from the roll shaft for increasing the tension on the belt at intervals, to cause it to expand the pulley.

3. In a package winding machine, a combined yarn traversing and package driving roll, its shaft, and means for imparting a variable speed
15 to the roll shaft, comprising an expansible pulley on the roll shaft, a pulley driving belt and means engaging the belt for increasing the tension on the belt at intervals, to cause it to expand the
20 pulley.

4. In a package winding machine, a combined yarn traversing and package driving roll, its shaft, and means for imparting a variable speed to the roll shaft, comprising an expansible pulley on the roll shaft, a pulley driving belt and
25 means operated from the roll shaft and engaging on the belt for increasing the tension on the belt at intervals, to cause it to expand the pulley.

5. In a package winding machine, a combined yarn traversing and package driving roll, its shaft, and means for imparting a variable speed to the roll shaft, comprising an expansible pulley on the roll shaft, a pulley driving belt and means
30 engaging the belt for increasing the tension on the belt at intervals, to cause it to expand the pulley, said last named means comprising a belt engaging pulley and a movable support therefor, operated from the roll shaft.
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6. In a package winding machine, a combined yarn traversing and package driving roll, its shaft, and means for imparting a variable speed
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to the roll shaft, comprising an expansible pulley on the roll shaft, a pulley driving belt and means acting on the belt for increasing the tension on the belt at intervals, to expand the pulley, said last named means comprising a cam driven from the roll shaft, a belt engaging pulley and a movable support therefor, actuated by the said cam.

7. In a package winding machine, a combined yarn traversing and package driving roll, its shaft, and means for imparting a variable speed to the roll shaft, comprising an expansible pulley on the roll shaft, a pulley driving belt and means acting on the belt for increasing the tension on the belt at intervals, to expand the pulley, said last named means comprising a cam driven from the roll shaft, a belt engaging pulley, a swinging support therefor and a connecting rod for the swinging support, actuated by the said cam.

8. In a package winding machine, a combined yarn traversing and package winding roll, driving means therefor arranged to speed up the roll more rapidly than it is slowed down, said means including an expansible pulley, its driving belt, a cam having abrupt and gradual faces, a belt engaging pulley and a movable support therefor, actuated by the cam for moving the belt engaging pulley to increase the belt tension at intervals.

9. In a package winding machine, a combined yarn traversing and package winding roll, its shaft, driving means therefor arranged to speed up the roll shaft more rapidly than it is slowed down, said means including an expansible pulley on the roll shaft, a pulley driving belt, a cam driven from the roll shaft and having abrupt and gradual faces, a belt engaging pulley and a movable support therefor, actuated by the cam for moving the belt engaging pulley to increase the belt tension at intervals.

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