

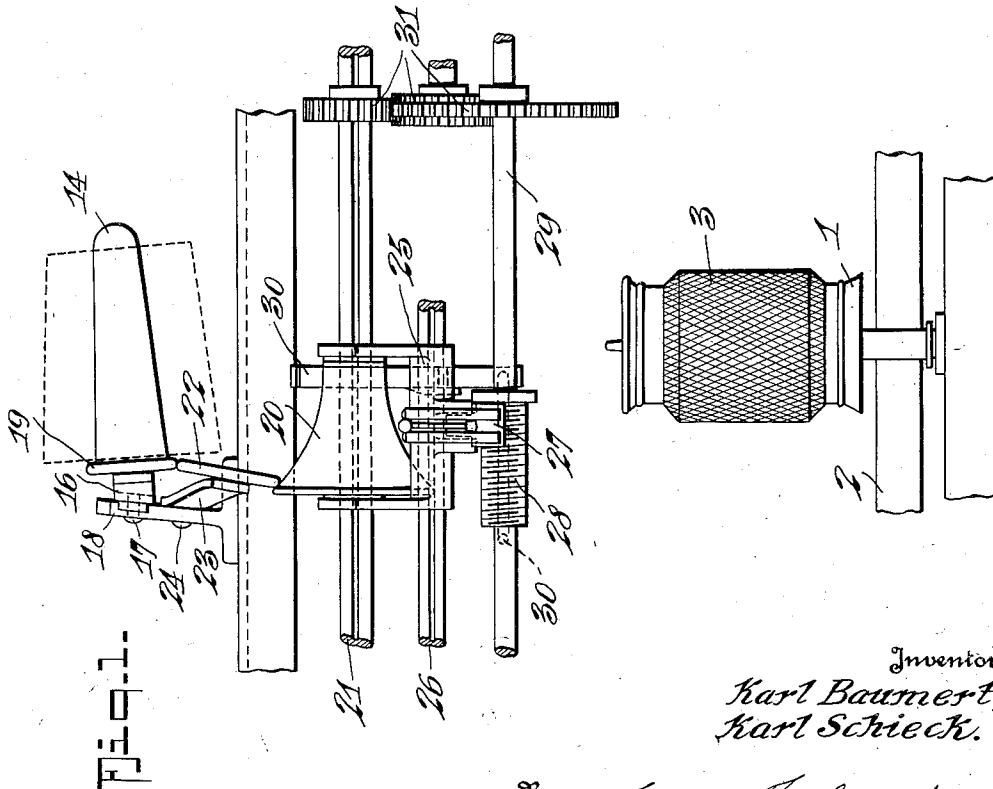
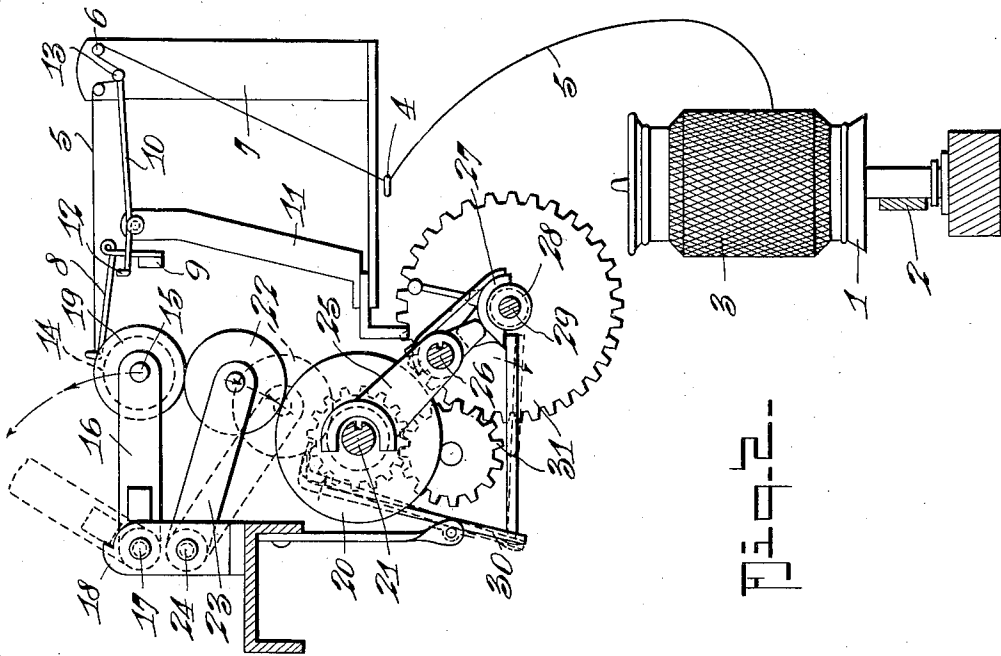
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CONE WINDING MEANS

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CONE WINDING MEANS

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14 Claims. (Cl. 117-26)

Combined machines are now being used in the artificial silk manufacture which twist the threads and at the same time wind them on cylindrical or conical take-up spools. These spools are usually driven either by cylindrical padded rollers or single padded conical rollers which have secured thereon paper tubes. With either driving means, the thread lying on the take-up spools contacts therewith and the resulting friction and pressure may cause considerable damage to the delicate threads.

Moreover, by driving the conical take-up rollers or spools by cylindrical rollers, certain parts of the tube are apt to slip, depending upon the amount of yarn that has been taken up on the larger or smaller diameter of the conical spool. This slippage will damage the yarn and owing to the varying take-up will cause an uneven twist.

The slippage can be eliminated by using as the driving means a conical member or cylinder provided that the winding is so arranged that the points of the conical drives and the points of the cones coincide at every winding thickness. Such winding may be obtained by diminishing or increasing the oscillation of the thread guiding means. Since the winding thickness of the cones is not the same on the length of yarn but increases towards the thicker end of the conical spool, the inclination of the outer layer of the threads will increase constantly. Owing to this inclination the layers will tend to slip off, which slippage interferes considerably with the after-treatment of the yarn.

Accordingly, it is an object of this invention to eliminate the usual friction drive above described and to provide means which will give a practically uniform take-up of the thread.

A further object of this invention is to twist the threads in the usual manner and to use a conical drive to actuate the take-up roller or spool, but which does not contact directly with the thread.

Further objects will become more apparent from the following detailed description of the invention, together with the accompanying drawing whereon:

Figure 1 is a diagrammatic view of the driving arrangement; and Fig. 2 is also a diagrammatic view but showing the relationship between the twisting spindle and the take-up means.

Referring now to the drawing there is shown a twisting spindle 1 driven by any suitable means such as a belt 2. From the spool 3, upon which the thread or yarn is wound preparatory to twisting, the thread or yarn 5, is passed through a

hook or guide means 4, over braking means 6, suitably secured to the member 7, and then passes to a thread guide 8 secured to an oscillatory member 9.

To avoid the destruction of the yarn body by the thread guide lying on the yarn, a lever 10 is pivotally secured to a support 11, an end of which 12 lies below the thread guide 8 and the other end 13 between the thread brake on the running thread. Should the thread at any time break, that end of the lever 13 resting on the moving thread falls down and the other end striking the thread guide 8 raises it so that it will not contact with the yarn body.

The tube 14 of any suitable material such as card-board is mounted on spindle 15 which is suitably secured to an arm 16 pivotally secured at 17 to a support 18. A friction disk 19 is secured to the spindle in any suitable manner at a point adjacent to the arm 16.

In the preferred embodiment, the driving means consists of a cone shaped member 20 splined to a shaft 21 driven by any suitable source of power (not shown).

Intermediate the disk 19 and cone 20 may be positioned a disk 22 which, contacting with the cone and disk 19 transmits rotation from the shaft 21 to the spindle 15. This disk is rotatably mounted on an arm 23 pivotally secured at 24 on the support 18 immediately below the pivotal connection of the arm 16.

Since the thickness of the thread increases, the rotation of the spindle must be decreased in order to maintain constant the peripheral speed of the thread body. Means are therefore provided to gradually shift the cone from right to left on the shaft 21 and the mantle line of the cone must be curved to obtain the desired result.

The cone 20 is shifted from right to left by means of a forked member 25 splined to a fixed shaft 26. The forked member is shifted by means of a spring-pressed threaded half-nut 27 which is pivotally secured thereto and which contacts with a lead screw 28 secured to a shaft 29. This shaft is rotated by shaft 21 through suitable gearing 31.

The operation of the device is as follows:

A spun spool of thread is placed on the twisting spindle and the thread is passed through a guide, over a thread brake and is placed on the spool 14 by means of an oscillating guide. The spool is rotated thru disks 19 and 22 by means of the cone 20. To maintain the peripheral speed of the thread body constant, the cone is gradually shifted from right to left by means of the

lead screw, and the disks 19 and 22 remain in contact with each other, and the disk 22 in contact with the cone by virtue of the pivotal mounting of the arms 16 and 23 to which they are respectively connected. When the half nut has traversed the length of the lead screw, it is pressed against the shaft 29 and by virtue of a suitable stop means 30 the disk 22 is moved away from the cone thereby stopping the winding mechanism.

It is to be understood that the invention is not limited to the precise construction shown, but it includes within its purview whatever changes that come within the terms and spirit of the appended claims.

What is claimed is:

1. In a combined twisting and spooling device comprising a twisting spindle mounted thereon, means for rotating the said spindle, a take-up means, an oscillating thread guide for placing the thread on the said take-up means, and means for rotating the said take-up means including a conical shaped driving member, a forked member slidably mounted adjacent to said driving member, and having a half nut pivotally secured thereto, and a lead screw with which the half nut contacts for progressively moving the said conical driving member laterally.

2. In a take-up mechanism having a movably mounted take-up spindle, means for rotating the spindle including a conical driving means, a forked member contacting with said conical driving means and in operative relation thereto, a half nut pivotally secured thereto, a lead screw with which the half nut contacts, whereby when the lead screw is rotated the driving means is progressively moved laterally.

3. A take-up mechanism comprising a movably mounted rotatable take-up spindle, a disk secured to said spindle, means for rotating said disk, said means comprising a shaft, a driving cone slidably secured on said shaft and means for progressively moving the driving cone on said shaft, including a lead screw and a forked member contacting with the said driving cone and being actuated by the lead screw.

4. A take-up mechanism for winding threads on spools comprising, a take-up spindle provided with thread receiving means, an oscillating thread guide for placing the thread on said thread receiving means, and means for rotating the said spindle including a conical driving means, and means for progressively moving the said driving means laterally.

5. A take-up mechanism for winding thread upon a spool comprising a pivotally mounted spindle adapted to have a spool placed thereon, means for distributing thread thereon and means for driving the said spindle, including a conical driving member, means for moving the said driving member laterally at a predetermined rate of speed, whereby as the thickness of the thread on the spool increases, the peripheral rate of speed of the thread remains constant.

6. A take-up mechanism for winding threads upon spools comprising a pivotally mounted spindle, a splined drive shaft positioned therebelow, a conical driving member slidably secured thereto, rotating means contacting with said spindle and said driving means, and means for moving the conical driving member laterally, including a forked member contacting with the conical driving member and having a half nut pivotally secured thereto, a lead screw so positioned as to contact with said half nut and being driven by

the said splined drive shaft whereby the said conical driving member is moved laterally at a predetermined rate of speed thereby maintaining constant the peripheral speed of a yarn body as it builds up on the spool.

7. A take-up mechanism for threads comprising a support, an arm pivotally secured thereto, a take-up spindle, a driving disk integral with said spindle, said driving disk and spindle rotatably mounted on said arm, a second disk rotatably mounted on an arm pivotally secured to said support below said first mentioned arm, said second disk contacting with said driving disk, a splined drive shaft, a conical driving member on said splined drive shaft rotating with but slidable with relation thereto, contacting with and driving said second disk, means for moving the said conical driving member laterally including a second shaft positioned below the splined drive shaft and carrying a forked member which contacts with said conical driving member and having a half nut pivotally secured thereto, a third shaft carrying a lead screw for operatively engaging said half nut, a driving connection between said third shaft and said splined drive shaft whereby upon rotation of said splined drive shaft said third shaft and lead screw will impart a lateral movement to said conical driving member and thus progressively decrease the rate of speed of the spindle.

8. A driving mechanism for a take-up spindle adapted to receive a take-up spool upon which thread is to be wound, comprising means for maintaining the peripheral speed of a thread body constant as it increases in diameter on the take-up spool, including a conical driving means for said take-up spindle and means for imparting a predetermined lateral movement to said conical driving means and thus progressively decrease the rate of speed of the said spindle.

9. A take-up mechanism for winding threads on spools, comprising a pivotally mounted spindle, means for driving said spindle, said means including a drive shaft, a conical driving member thereon, rotating therewith but slidable with relation to said drive shaft, means for moving said conical driving member laterally, including guide means having a connecting means with said conical member, a lead screw operatively contacting with said guide means and being driven by said drive shaft whereby the said conical driving member is moved laterally at a predetermined rate of speed, thereby maintaining constant the peripheral speed of the thread body as it builds up on the spool.

10. A take-up mechanism for winding threads on spools, comprising a pivotally mounted spindle, means for driving said spindle, said means including a drive shaft, a conical driving member thereon, rotating therewith but slidable with relation to said drive shaft, means for moving said conical driving member laterally, including a forked member contacting with said conical driving member and having threaded means pivotally secured thereto, a lead screw operatively positioned to engage said threaded means, and being driven by said drive shaft, whereby the said conical driving member is moved laterally at a predetermined rate of speed, thereby maintaining constant the peripheral speed of the thread body as it builds up on the spool.

11. A take-up mechanism for threads comprising a support, an arm pivotally secured thereto, a take-up spindle, a driving disk integral with said spindle, said driving disk and spindle ro-

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tatably mounted on said arm, a second arm pivotally secured to said support below said first mentioned arm and rotatably secured thereto a disk, a splined shaft positioned below the said support, a conical driving member rotating with said splined shaft but slidable with relation thereto, said conical driving member contacting with said last mentioned disk for driving the same, and means for moving the said conical driving member laterally, including a second shaft, a forked member slidable on said second shaft, said forked member contacting with said conical driving member, said forked member having threaded means pivotally secured thereto, a third shaft carrying a lead screw in operative relation to said threaded means, and having a driving connection with the said splined shaft whereby upon rotating of said splined shaft the lead screw will impart lateral movement to the said conical driving member and thus progressively decrease the rate of speed of the spindle.

12. A take-up mechanism comprising a pivotally mounted take-up spindle, a disk secured thereto, a shaft, a driving cone rotating with said shaft but slidable with relation thereto, a

driving connection between said driving cone and said disk, means for progressively moving the driving cone laterally, including a lead screw and a member contacting with said driving cone and being actuated by the said lead screw.

13. A take-up spindle, an oscillating thread guide for placing the thread on the spindle, and means for rotating the said spindle including a conical shaped driving member, a slidable member mounted in operative relation to said conical driving member, and having threaded means pivotally secured to said slidable member, and a lead screw with which the threaded means engages for progressively moving the said conical driving member laterally.

14. A take-up mechanism comprising a movably mounted rotatable take-up means, said take-up means provided with thread receiving means, an oscillating thread guide for placing thread on said thread receiving means, and means for rotating the said take-up means, including a conical driving means, and means for progressively moving the said driving means laterally.

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