N. E. KAHN.

DEVICE FOR WAXING YARN.

APPLICATION FILED JUNE 16, 1909.

960,335. Patented June 7, 1910.

FIG. I.

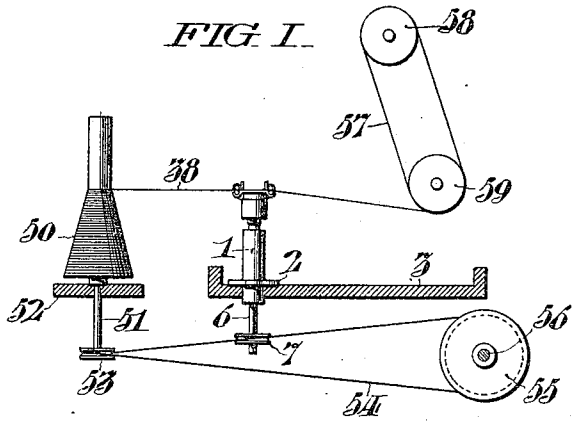


FIG. II.

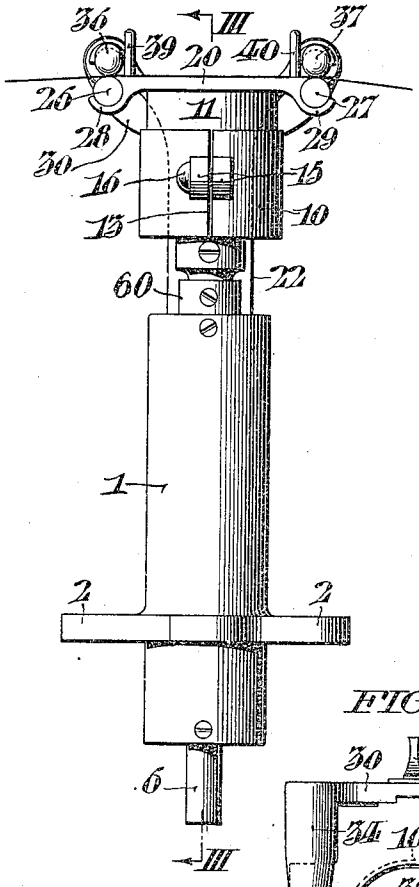


FIG. III.

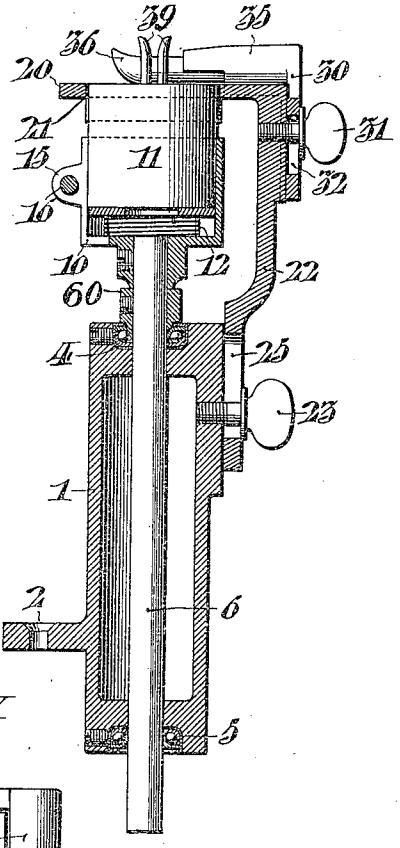
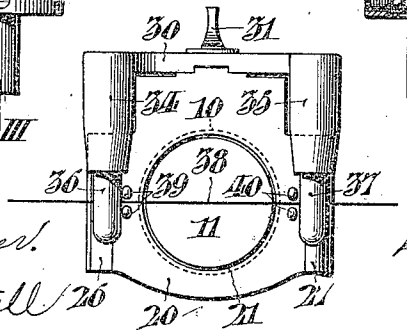


FIG. IV.



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DEVICE FOR WAXING YARN.

960,335. Specification of Letters Patent. Patented June 7, 1910.

Application filed June 16, 1909. Serial No. 502,424.

To all whom it may concern:

Be it known that I, NATHAN E. KAHN, of Woodbine, in the county of Cape May and State of New Jersey, have invented a certain new and useful Device for Waxing Yarn, whereof the following is a specification, reference being had to the accompanying drawings.

Prior devices having for their end the waxing of yarn, have usually employed a receptacle loosely containing a number of pieces of wax, and have passed the thread through this receptacle in such a way that it comes more or less in contact with the edges of the broken pieces of wax therein. This method is objectionable because of the uneven consumption of the wax, and the consequent unevenness of the waxing of the thread. Further it admits of no means for regulating the amount of wax to be imparted to the thread. It has also been proposed to wax yarn by passing it through a receptacle containing the wax in liquid or semi-liquid condition, but this wastes wax, because of its absorption into the body of the yarn, and also involves elaborate mechanism.

I am also aware of the device patented to G. F. Grosser, in Austrian Patent No. 3910, issued April 25th, 1901, in which a yarn is caused to pass between the shoulder of a roller and a ring of wax spring-pressed thereupon, the friction of the yarn being relied upon to impart rotation to the roller. This is objectionable because if the roller ceases to rotate, the yarn cuts a groove in the wax, which prevents its further rotation, and soon limits the usefulness of the device. Furthermore, in the Grosser device, the yarn is pressed against the wax, by the shoulder of the roller, and thereby subjected to undue friction, while in my device, the yarn has no pressure upon the wax other than its traveling tension..

My present invention aims through a simple contrivance, to avoid the difficulties of both these prior methods, and supplies a device in which both the solid piece of wax and the yarn to be waxed, are positively supported in relation to each other during the waxing process, and such relative motion imparted to them as to cause the thread to be waxed to the desired degree only.

The device therefore consists of means for firmly supporting the traveling yarn, as for example, on its way from the creels to the cop, in which connection the speed with which it passes through the waxing device may be regulated as desired; and means for positively supporting and rotating a piece of wax and maintaining it in positive contact with the yarn as it travels through the support. In connection with this means I combine means for accurately adjusting the relation of the wax to the yarn, and means for maintaining the wax in constant rotation while the yarn passes over its axis of rotation.

When I speak in the specification and claims of positively rotating the piece of wax, I refer to rotation imparted to the wax, by means other than the frictional contact of the yarn as it passes over it. This latter method of rotating the wax is objectionable because in so far as the wax and the yarn move together, is the waxing effect diminished.

In the accompanying drawings, Figure I, is a diagrammatic view of a device embodying my invention. Fig. II, is a front elevation of the yarn waxer. Fig. III, is a longitudinal sectional view of the same taken on the line III, III, in Fig. II. Fig. IV, is a plan view of the device.

In the said figures, 1, designates a hollow cylindrical supporting body having lugs 2, by which it is secured to a suitable plate or table 3, as shown in Fig. I. The ends of the cylinder 1, are provided with ball bearings 4, and 5, within which rotates a vertical spindle 6, carrying at its lower end a grooved pulley 7. The bearing 4, operates as a thrust bearing to vertically support the spindle by means of the bearing collar 60, fast upon the spindle.

A split cup 10, is set upon the upper end of spindle 6, and is adapted to receive a cylindrical cake of wax 11. This cup is split at 13, where lugs 15, are provided connected by a screw 16, whereby the cylindrical cake of wax may be clamped in place with the required degree of projection above the edge of the cup. A spring 12, at the bottom of the cup facilitates the adjustment of the cake at the proper height when from time to time the screw 16, is loosened for this purpose.

An overhanging plate 20, is provided with a circular aperture 21, which is concentric with the axis of the spindle 6, and is slightly larger in diameter than the wax

cake 11. The said plate 20, extends laterally from an arm 22, which is adjustably secured to the back of the cylinder 1, by means of a thumb screw 23. The said screw 23, passes through an elongated slot 25, in the lower portion of the arm 22, whereby the latter is rendered adjustable vertically with respect to the cylinder 1. At its outer edges plate 20, supports a pair of parallel cylindrical glass pins 26, and 27, which are respectively received in sockets 28, and 29, which only partly surround their pins thereby exposing them at the top as clearly shown in Fig. II. A second bracket 30, is adjustably secured to the back of arm 22, by means of a thumb screw 31, which passes through a slot 32, in the said bracket 30, and is threaded into the arm 22, thus permitting relative vertical adjustment between the two. Bracket 30, supports two lugs 34, and 35, which project laterally therefrom and carry porcelain fingers 36, and 37, respectively, which are located in line and paired with the glass pins 26, and 27, on plate 20. The thread 38, passes between these glass and porcelain pins, and is further guided over the center of the aperture 21, in plate 20, by pins 39, and 40, which are set in pairs in the plate 20, in proximity to the glass guides 26, and 27.

It will be observed that the porcelain and glass fingers which have been referred to as coöperating with the pins 39, and 40, operate not only as guides to position the yarn, but are also useful as imparting an adjustable tension to the same. Furthermore, by accurately adjusting the fingers in relation to the thickness of the yarn which is being employed, said fingers further operate as knot-catchers, causing the yarn to break in preference to permitting a knot or tangle in the yarn to pass between the fingers. The use of fingers and rods of vitreous material is desirable, not only because of the clean handling of a delicate yarn, but from the fact that the yarn does not cut grooves at the points of contact, as is the case where metal parts are used.

As seen in Fig. I, a thread bobbin 50, is carried on a spindle 51, which is mounted for rotation in a plate 52. The said spindle 51, carries at its lower end a sheave 53, which is driven by means of a belt 54, from a pulley 55, secured on a driving shaft 56. Belt 54, also imparts motion to the spindle 6, by means of its contact with the pulley 7.

It is obvious that other means of imparting rotation to the spindle may be employed, but that which I have described has the advantage of definitely relating the speed of rotation of the spindle to the speed of the thread bobbin.

The operation of the device is as follows:—The constant rotation of the bobbin 50, causes the thread 38, to be drawn from the skein 57, which may be supported upon suitable rollers 58, and 59, as seen in Fig. I. The rotating wax is adjusted from time to time, as it wears away, so that its upper surface is held against the traversing thread, which is guided over the center of the aperture 21, in plate 20, by means of the pins 39, and 40, and held in place by means of the co-action of the fingers 36, and 37, with their respective glass fellows 26, and 27, as hereinbefore explained. As the upper surface of the wax gradually wears away through its contact with the thread, the proper adjustment between the two is constantly maintained by adjusting from time to time either the height of the wax cylinder in its cup, or the vertical position of the supporting means for the thread by manipulation of the thumb screw 23. A still more delicate adjustment is secured by varying the vertical position of the fingers 36, through manipulation of the thumb screw 31, and by virtue of these differing adjustments it is possible to regulate with extreme nicety, the precise amount of wax imparted to the yarn. Of course, an additional regulation of the same may be secured, if desired, by varying the rate of speed at which the yarn travels, and also the rate of speed at which the yarn cup is rotated.

By maintaining the wax cylinder in constant rotation by a positive drive, I secure an even wear at its upper surface, and by placing the axis of the rotating waxed cylinder at right angles to the path of the travel of the yarn, and by causing the yarn to pass over the center of rotation, I obtain a frictional contact of the wax with the yarn in both directions, that is to say, both with and against the natural twist of the yarn, which I find to be a very effective arrangement for carrying out the end in view.

While I have shown a cup within which the wax cylinder may be clamped, it must be understood that other means of mounting the wax upon the rotating spindle may be employed. When I speak of the employment of wax, I mean to include all analogous waxy substances, which may be employed to finish the surface of yarns.

It will be observed that the device as I have shown it, in the drawing, is capable of much variation, without departing from the spirit of my invention, which essentially aims to afford positive rotation to a piece of solid waxy substance, and positive support and adjustment to a yarn traveling in contact with its surface.

Having thus described my invention, I claim:—

1. In a yarn waxing device, the combination of a block of wax; a holder within which said block of wax is set; means for

rotating said holder; and means for leading yarn across the axis of rotation of the block of wax and in contact therewith.

2. In a yarn waxing device, the combination of means for guiding a traveling yarn with means for positively supporting and means for positively rotating a single piece of waxy substance in such relation to the yarn that the yarn is caused to travel across and in contact with said rotating piece without pressure thereon other than its traveling tension.

3. In a yarn waxing device, the combination of a cylindrical cup; means for rotating said cup; means for clamping within the cup a cylindrical piece of wax with the exposure of one of its ends; and means for causing yarn to pass over the axis of rotation of the wax and in contact with its exposed rotating surface.

4. In a yarn waxing device, the combination of vertical yarn guiding fingers in pairs; horizontal yarn guiding fingers also in pairs one horizontal pair being correlated to one vertical pair; and means for supporting a piece of wax between said correlated pairs.

5. In a yarn waxing device, a yarn guide comprising two pairs of horizontal fingers; means for permitting adjustment of the vertical relation between the fingers, and means for pressing a waxy substance against the yarn as it passes from one pair of fingers to the other.

In testimony whereof, I have hereunto signed my name, at Philadelphia, Pennsylvania, this seventh day of June, 1909.

NATHAN E. KAHN.

Witnesses:
ROBERT B. LINDSAY,
JAMES H. BELL.