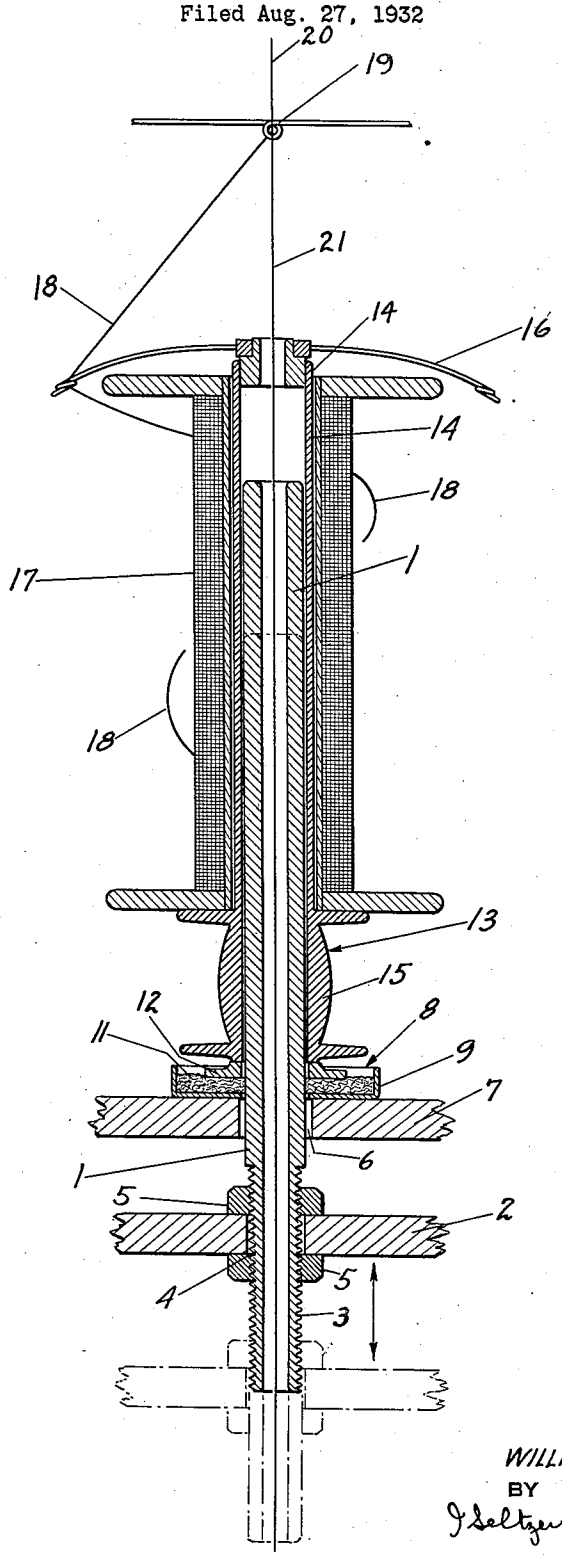
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TEXTILE SPINDLE

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TEXTILE SPINDLE

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This invention relates to textile spindles and more particularly to hollow spindles for use in twisting and doubling and analogous operations on natural or artificial fibres, filaments, threads or yarns, especially at high or very high speeds. An example of a textile operation to which this invention is particularly adapted is the twisting or doubling of threads or yarns of artificial or natural filaments or fibres wherein a high twist is required to be imparted to the threads or yarns, or in the doubling of the same, for the production of crepes or fancy yarns.

In the twisting and doubling of threads or yarns of artificial or natural filaments or fibres by the employment of a hollow high-speed twisting spindle operating in the usual upward ballooning method of spinning with the aid of a flyer attached to the head of the spindle, the thread or yarn from a package mounted on the spindle is wrapped around another thread or yarn which passes through the hollow spindle, the second yarn or thread being drawn from a different source of supply. By the use of a hollow spindle there may be produced combined threads or yarns of any different properties and characteristics such as, for example, crepe threads or yarns of higher tenacity and compound threads or yarns in which are combined threads or yarns of standard and anti-standard twists, threads or yarns of low and high twists, threads or yarns of different dyeing characteristics, or of different sizes, etc.

It is the important object of the present invention to provide an improved form of apparatus to be used in the production of twisted and doubled threads or yarns of natural or artificial filaments or fibres.

Heretofore hollow spindles have been mounted in ball bearings to minimize the friction. However, this expedient was found to be far from satisfactory since ball bearings are not only expensive but also have a relatively short life. It was found that when a bearing with a filling slot was used, it required very little wear before a ball had sufficient play to tap the filling slot and a bearing immediately smashed, the balls being pulverized. To avoid the use of a filling slot, caged bearings were employed and in this case, a lip would be worn on the cage by the rubbing action of the ball, which lip would soon break off and get between the ball and the race, causing the bearing to seize and be destroyed.

In apparatus according to the present invention, the hollow spindle is journaled on a brass tube bearing which may be traversed with respect to the bobbin, or the bobbin may be traversed with respect to the bearing, just enough to produce a longitudinal wiping action of a lubricator and keep the spindle lubricated.

Other objects and advantages of this invention, together with certain details of construction and combinations of parts, will be more particularly described in the specification and pointed out in the appended claims.

In the drawing, the figure is a sectional elevation showing the apparatus of the present invention, with a thread package in position on the spindle and a thread from a suitable source threaded through the bearing and the whorl, which thread is combined at the thread guide with the thread from the package on the whorl to form the compound thread.

According to my invention, I mount the hollow bearing 1, which may be of any suitable material, preferably of brass, on a base, or rail, 2. The lower extremity of the bearing is threaded, as shown at 3. This threaded portion of the bearing cooperates with a tapped aperture 4 in the base whereby adjustment as to the height of the bearing may be made. The bearing is maintained in adjusted position by means of locknuts 5.

The bearing passes through an opening 6 formed in a fixed plate 7. Loosely fitted over the bearing and seated on plate 7 is a lubricating device, generally indicated by reference numeral 8, consisting of a metal receptacle 9 containing a felt pad 11 which is kept wetted with a suitable lubricating medium. A thrust bearing 12 of boxwood or other suitable material is also loosely fitted over the bearing and rests on the surface of the lubricating pad 11.

Journalled on the bearing is a bobbin carrier 13 which fits on the said bearing with just sufficient clearance for the carrier to rotate around the bearing freely and without vibration due to excessive clearance. The bobbin carrier consists of a brass tube 14 having fixed thereto a belt contacting portion, or whorl, 15, which is preferably made of steel. At the head of the bobbin carrier is mounted a flyer 16. Instead of said flyer, any equivalent device, such as a ring adapter, may be employed.

In operation, the bobbin carrier 13 and a thread package, such as bobbin 17, are rotated by any conventional means, such as a belt (not shown) passing over whorl 15. Assuming the apparatus to be twisting and doubling, the bobbin carrier 13 is rotated in an anti-clockwise direction, as viewed from above. The thread 18 from

the rotating bobbin passed through one arm of the flyer 16 to the thread guide 19. The rotating thread 18 combines with a thread 21 which is drawn from a suitable package (not shown) and passes up through the hollow bearing 1, tube 14 and flyer 16 and the compound thread 20 is wound on any suitable package, such as take-up bobbin (not shown).

The thread 21 may be twisted or non-twisted, as for instance a twisted or non-twisted thread of filaments or fibres of cellulose acetate artificial silk or other artificial or natural filaments or fibres, or two or more ends of parallel or doubled yarns or threads of any kind, whether of similar or dissimilar material.

For the purpose of lubricating the bearing, the latter is traversed with respect to the bobbin carrier, the lubricant being applied to the bearing by wiping against the felt pad 11. The traverse of the bearing is effected by vertically reciprocating the base 2 by any of the means well known in the art. The length of the traverse may be from one-half to two inches in length. However, I have found that a traverse of substantially one inch in length was quite sufficient to effect the necessary lubrication of the bearing.

While in the arrangement shown in the drawing, the bearing is adapted to be traversed with respect to the bobbin carrier, it will be readily understood that the bearing may be stationary and the bobbin carrier may be traversed with respect to the bearing. In the latter arrangement, any sudden change in the direction of the bobbin which would cause a sudden change in the length of the thread between the bobbin applying the twist and the take-up bobbin is avoided by the employment of mechanisms which are well known in the art.

It will be understood that the foregoing detailed description is given merely by way of illustration, and that many variations may be made therein without departing from the spirit of my invention.

Having described my invention, what I desire to secure by Letters Patent is:

1. In apparatus for the production of compound threads, in combination, a rotatable carrier adapted to receive a thread package, a non-rotatable vertical bearing on which said carrier is journaled, said bearing being hollow for the passage of a thread therethrough, thread guiding means carried by a free end of said bearing and means for reciprocating said bearing, the apparatus being so constructed and arranged that by the rotation of the carrier about the bearing the thread from the package is twisted about the thread passing through the hollow bearing to form a compound thread, the thread from the package being guided in its travel by said thread guiding means.

2. In apparatus for the production of compound threads, in combination, a rotatable carrier adapted to receive a thread package, a non-rotatable vertical bearing on which said carrier is journaled, said bearing being hollow for the passage of a thread therethrough, thread guiding means carried by a free end of said bearing, means for reciprocating said bearing and means for lubricating said bearing, the apparatus being so constructed and arranged that by the rotation of the carrier about the bearing the thread from the package is twisted about the thread passing through the hollow bearing to form a compound thread, the thread from the package being guided in its travel by said thread guiding means.

3. Apparatus for the production of compound threads comprising, in combination, a vertically reciprocating base, a bearing rigidly fixed thereto, and vertically movable therewith, said bearing being hollow for the passage of a thread therethrough, a thread guide carried by said hollow bearing at the free end thereof, a rotatable carrier adapted to receive a thread package journaled on said bearing and means for lubricating said bearing, the apparatus being so constructed and arranged that by the rotation of the carrier about the bearing the thread from the package is twisted about the thread passing through the hollow spindle to form a compound thread, the thread from the package being guided in its travel by the thread guiding means.

4. Apparatus for the production of compound threads comprising, in combination, a vertically reciprocating base, a bearing rigidly fixed thereto, and vertically movable therewith, said bearing being hollow for the passage of a thread therethrough, a thread guide carried by said hollow bearing at the free end thereof, a rotatable carrier adapted to receive a thread package journaled on said bearing and means for wiping a lubricant on said bearing, said wiping action taking place during the reciprocation of said bearing, the apparatus being so constructed and arranged that by the rotation of the carrier about the bearing the thread from the package is twisted about the thread passing through the hollow spindle to form a compound thread, the thread from the package being guided in its travel by the thread guiding means.

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