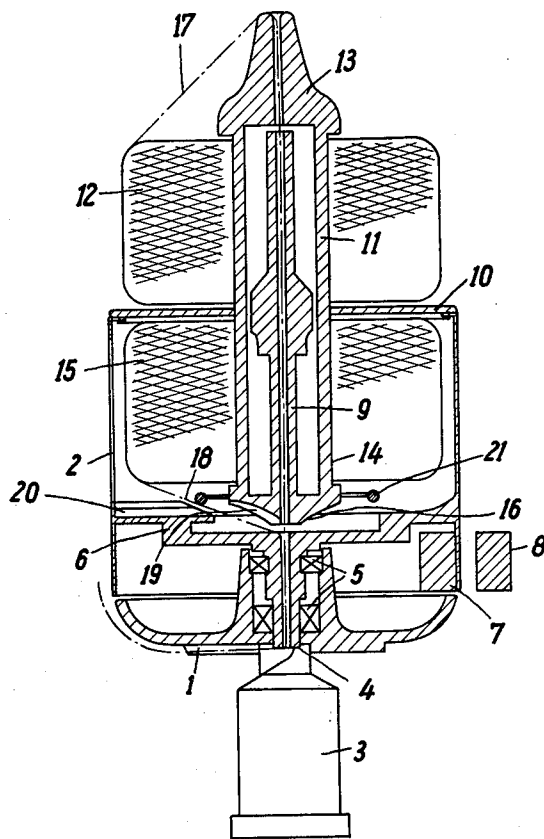


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METHOD OF AND A DEVICE FOR DOUBLING YARN
ON DOUBLE TWIST SPINDLES
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METHOD OF AND A DEVICE FOR DOUBLING YARN ON DOUBLE TWIST SPINDLES

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The present invention relates to a method of and a device for doubling yarn on double twist spindles.

For doubling yarns on double twist spindles, it is as such already known to use packages disposed the one above the other and to withdraw the yarn from the packages over-end or tangentially for passing them both through the hollow spindle axle. Difficulties arise in over-end draw-off inasmuch as the two yarns must travel through different distances and especially the yarn withdrawn from the lower package experiences more friction along its path of travel than the upper yarn, for instance by rubbing against the upper package. There is also some risk of the yarns becoming entangled. This risk is reduced if the yarns are withdrawn tangentially from packages which are freely rotatable. However, even in this latter arrangement the distance of travel of the yarns from both packages and their respective tensions differ, and this leads to trouble.

It is the object of the present invention to overcome the difficulties inherent in known methods. The invention therefore proposes to draw off the yarn over-end from the upper package and to feed the same into the hollow interior of the spindle from the top. The yarn from the lower package is drawn off in the downward direction and introduced into the spindle tube for the purpose of combining it with the yarn from the upper package. This prevents the yarns from making contact during draw-off from the packages. Moreover, the conditions of draw-off are alike for the yarns of both packages. The yarns remain separate until they come together in the tube, so that the actual process of twisting is performed within a very short distance.

The packages are stationary during this process. In some instances it may be advisable to mount the packages in such manner that they are freely rotatable, in which case the yarn is drawn off tangentially.

For performing this method the invention proposes to use a device in which the hollow stem of the spindle is used for mounting the packages. This hollow stem is secured to the cover of a stationary package holder of known construction. The tubular cores of the packages are pushed on to the hollow stem from both ends on either side of the cover, that is to say from above and below.

The drawing illustrates a preferred embodiment of the invention in more or less schematic form in vertical axial section. By reference to this drawing the method will be hereinafter explained and other features of the device described.

The double twist spindle in known manner comprises a spinner 1 and a stationary package holder 2. Spinner 1 is mounted on the wharve 3.

The supporting plate 6 is mounted on the spindle tube 4 of the spinner in ball bearings 5 and the package holder is secured to the plate. In conventional manner the package holder is kept stationary by an inside magnet 7 and an outside magnet 8.

The hollow stem 9 is utilised to carry the packages. It is secured to cover 10 of package holder 2, for instance by threads or by flanges and bolts. The tubular core 11 of the upper package 12 is pushed on to the hollow stem 9 from above and at the same time carries an entry cone 13 which is detachable. The hollow core 14 of the lower package 15 is pushed on to the hollow

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stem 9 from below, and retained in position by a cap 16 secured to the tube by threads or a press fit.

As will be readily understood the yarn 17 from the upper package 12 is taken directly to the entry cone 13 and passes through the hollow stem 9 into the spindle tube 4 below. Yarn 18 which is withdrawn from the lower package 15 directly enters the spindle tube 4 where it is combined with yarn 17 from package 12, both yarns together emerging from the slit in spinner 1 to form a balloon for twisting.

Cap 16 which has a central bore is also provided with a radial groove 19 which extends to the central bore in the cap. Package holder 2 is formed with a threading channel 20 which extends radially from the outside inwards and which may be accessible from the top through a slit. This arrangement permits the yarn 18 from package 15 to be threaded. The threading tool is pushed through channel 20 and the yarn can then follow the tool through the slit. The threading tool is guided along groove 19 in cap 16 so that it will reliably and properly enter spindle tube 4 and radially emerge through the spinner. Yarn 17 is threaded in the simple conventional manner.

It may be advisable to affix a braking ring 21 to cap 16 by means of stays or the like, said braking ring taking effect when the diameter of the lower package 15 has been considerably reduced. This creates conditions of draw-off which balance the conditions of draw-off of yarn i.e., to equalise the tension in the two yarns. The stationary braking ring 21 might be replaced by a braking blade which is dragged around by the yarn.

It will thus be clear that the two yarns 17 and 18 will meet for the first time at the upper end of the spindle tube 4. Twisting is therefore performed in a very short distance, a circumstance which has a particularly favourable effect.

The proposed method and device according to the invention are especially suitable for twisting staple fibre of natural and synthetic fibre materials.

What I claim is:

1. The method of doubling on double twist spindles which carry yarn packages disposed one above the other, in which the yarn from the upper package is drawn off over-end and passes downwards into a hollow stem of the spindle from above and the yarn from the lower package is drawn off in the downward direction and introduced into the spindle tube for combination with the yarn from the upper package and the yarns are then twisted together.

2. The method according to claim 1, in which the said packages are kept stationary.

3. The method of doubling on double twist spindles which carry yarn packages disposed co-axially one above the other, which comprises drawing off the yarn from the upper package over-end and passing it downwards axially of the device to a spinner and drawing off the yarn from the lower package in the downward direction and guiding the two yarns axially of the device below the lower package to the spinner so that the two yarns come together and then twisting them together.

4. A double twist spindle device comprising a yarn package holder comprising a hollow stem and adapted to support yarn packages co-axially one above the other, a spindle tube and spinner, and means for guiding the yarn from the upper package drawn over-end down through the said hollow stem and into the said spindle tube and means for guiding the yarn from the lower package drawn off in the downward direction also into the said spindle tube for joint passage through the spindle tube and twisting.

5. A double twist spindle device according to claim 4, comprising a holder for the packages comprising a de-

tachable cover member secured to said stem, and means permitting a tubular core of each package to be pushed on the hollow stem one from one side and the other from the other side of the said cover member into co-axial operative relationship.

6. A spindle device according to claim 4, said stem comprising a cap with a central bore for retaining the tubular core of the lower package, said cap being provided with a radial groove which extends into the said central bore and forms a guide for a threading tool.

7. A spindle device according to claim 4, said stem comprising a radial threading channel through which yarn from the lower package may pass from the said package to the spindle tube.

8. A spindle device according to claim 4, comprising a brake for the yarn withdrawn from the lower package.

9. A double twist spindle device comprising a yarn package holder having an intermediate cover member and a hollow stem attached thereto, said holder being adapted to support yarn packages co-axially one above and one below the said cover member, a member to retain the lower package on the said hollow stem, said member hav-

ing a radial guide groove for a threading tool, and said holder having a radial threading channel situated to enable yarn from the lower package to be drawn-off in the downward direction and to pass through the said channel, a spindle tube and spinner, said tube being situated so that the downwardly extending yarn from the said channel can be led through the said tube to the spinner, and said stem being associated at its upper end with means permitting yarn from the upper package to be drawn off such package over end and pass downward through the said stem and also enter the said spindle tube so that the two yarns meet at the top of the spindle tube and pass together through the tube for twisting.

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