Oct. 31, 1967 A. BOUTONNET 3,349,554

FALSE TWIST SPINDLE

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Fig. 1.

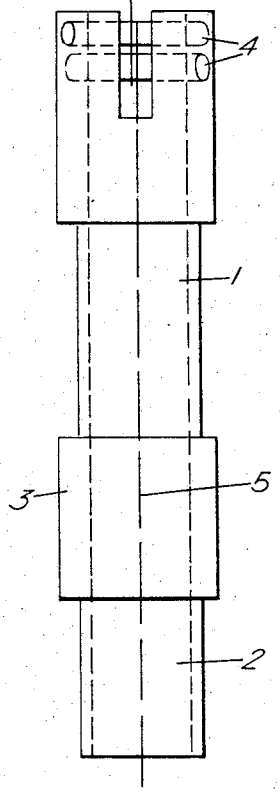

Fig. 2.

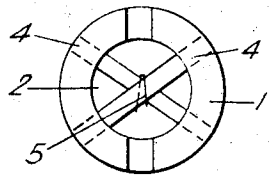

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Fig. 3.

Fig. 4.

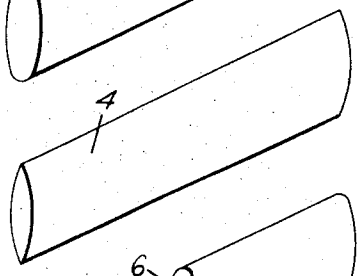


Fig. 5.

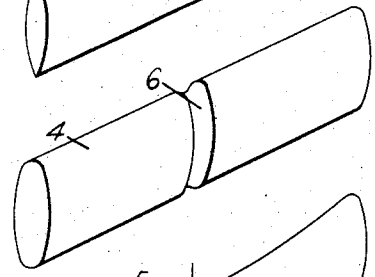


Fig. 6.

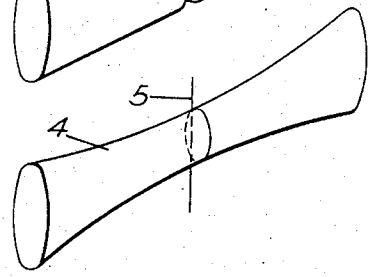
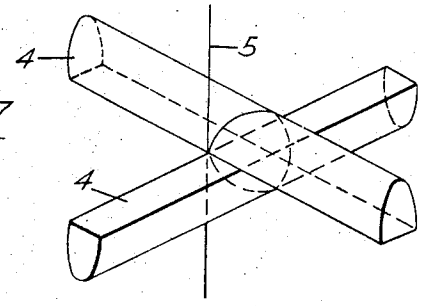


Fig. 7.



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FALSE TWIST SPINDLE

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Claims priority, application France, Aug. 14, 1964, 985,247
9 Claims. (Cl. 57—77.3)

The present invention relates to a false twist spindle comprising a device for effectively arresting the twist of the filament.

In false twist spindles, it has been proposed to use for arresting the twist of the filament travelling through the spindle, bars of various profiles, such as cylinders or diabolos, which have a circular cross-section. If such bars are employed, it sometimes happens that the twisting of the filament is not sufficiently arrested, whereby irregularities arise in the treated filament.

It has also been proposed to use for arresting the twisting devices which have a circular channel perpendicular to the axis of the spindle. The positioning of such devices on the spindle is a delicate operation, which may result in an unbalance of the spindle when it rotates at high speed.

According to the present invention there is provided a hollow cylindrical spindle for imparting a false twist to a filament travelling through it and comprising at least one transverse bar about which the filament passes with a reversal of its twist, the said bar having in its zone of contact with the filament non-circular sections whose periphery has at least one region having a very pronounced curvature, which is situated in the path of the filament.

With such a false twist spindle, the twisting of the filament passing through it can effectively be arrested, and high speed operation is possible.

In the sense of the present description, "sections whose periphery has at least one region having a very pronounced curvature" are meant sections such that the filament undergoes a sudden change of direction in the course of its travel around the bar. There are advantageously employed for this purpose bars which are elliptical in cross-section, the ellipse having a high curvature at the end of the major axis.

There may be conventionally employed either a single bar or two bars arranged crosswise. According to the present invention, there are advantageously employed bars having a profile in the form of a diabolo, or bars of constant cross-section optionally formed with a groove for positioning the filament. If two crosswise arranged bars are employed, each may have a cross-section which is semi-elliptical or a truncated ellipse comprising only a single region of high curvature, the said bars being so disposed that the filament passes over the said region of high curvature of each of them.

There may advantageously be employed flattened cross-sections comprising substantially sharp angles in order to improve arresting of the twisting of the filament.

In order that the invention may more readily be understood, the following description is given, by way of example, with reference to the accompanying drawings, in which:

FIGURE 1 is a front elevation of a false twist spindle according to the invention;

FIGURE 2 is a top plan view of the spindle of FIGURE 1, and

FIGURES 3, 4, 5, 6 and 7 illustrate in perspective various forms of the bars serving to arrest the twist.

Referring to FIGURES 1 and 2, the spindle 1 there illustrated consists of a cylinder formed with a cylindrical channel 2. The spindle is driven in known manner

at 3. The twisting of the filament is arrested by the device comprising two bars 4 arranged crosswise, which are perpendicular to the axis of the channel 2, the path of the filament being shown at 5. Such bars, which are shown in perspective in FIGURE 3, have a constant elliptical cross-section. The major axis of the ellipse bounding the said cross-section is parallel to the axis of the channel 2 of the spindle.

FIGURE 4 illustrates a variant of FIGURE 3 in which substantially sharp angles have ben machined at the ends of the major axis of the elliptical cross-section.

FIGURE 5 illustrates another constructional form of bar 4. The cross-section of such a bar is elliptical and comprises a central groove 6 serving for positioning the filament. Such a bar may be employed in false twist spindles comprising only one bar for arresting the twisting.

In such spindles, there may also be employed a bar such as illustrated in FIGURE 6, which has a diabolo-shaped profile, but again is elliptical in cross-section, the path of the filament being indicated at 5.

As has been stated, two bars having a cross-section in the form of a truncated ellipse may be employed. Such bars are illustrated in FIGURE 7, the path of the filament being indicated at 5.

The false twist spindle according to the invention makes it possible to arrest effectively the twisting of the filament and to operate satisfactorily with spindles rotating at speeds of 200,000 r.p.m. and even more.

I claim:

1. A false twist spindle for imparting a false twist to a filament, such spindle comprising a hollow tube defining a central passage therethrough for the filament; at least one transverse bar extending across said passage; a peripheral surface to said bar about which a filament passes effective to reverse its twist; the cross-sectional shape of said bar at least at the center thereof being non-circular and such that the peripheral surface has at least one region having a pronounced curvature.

2. A false twist spindle as specified in claim 1 wherein the cross-sectional shape is such that the peripheral surface has at least two regions having a pronounced curvature.

3. A false twist spindle as specified in claim 2, wherein said bar has a plane of symmetry extending through said two regions of pronounced curvature.

4. A false twist spindle as specified in claim 3, wherein said plane of symmetry of said bar extends through the axis of said spindle.

5. A spindle as specified in claim 1, wherein said cross-sectional shape of said bar is elliptical.

6. A spindle as specified in claim 1 wherein the cross-sectional shape of said bar is substantially constant.

7. A spindle as specified in claim 1, wherein said cross-sectional shape of said bar is smaller near the center thereof.

8. A spindle as specified in claim 1, wherein means are provided on said peripheral surface defining a peripheral groove thereon.

9. A false twist spindle for imparting a false twist to a filament, such spindle comprising a hollow tube defining a central passage therethrough for the filament; a pair of transverse bars spanning said passage and being arranged in cross-over relationship to one another; a cross-sectional shape to each said bar, said shape being of semi-elliptical form defining a region of pronounced curvature on each said bar the region of pronounced curvature of one bar being remote from that of the other bar with respect to the tube axis.

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