Dec. 11, 1951 J. K. COCHRAN 2,578,513

APPARATUS FOR SPINNING AND TWISTING TEXTILE YARNS

Filed March 14, 1949

Fig. 1.

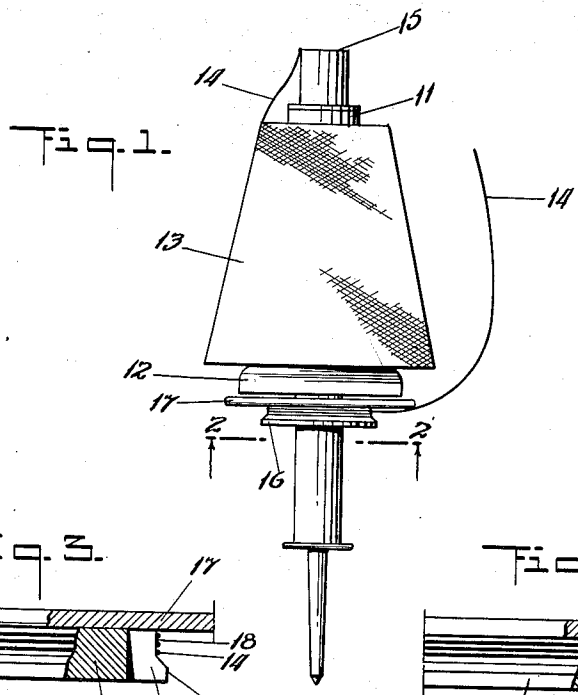


Fig. 3.

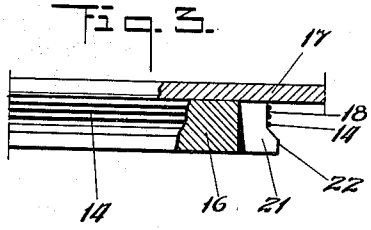


Fig. 4.

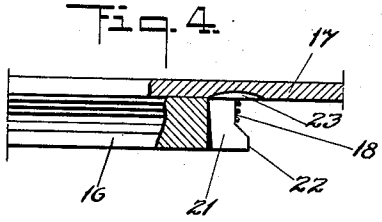
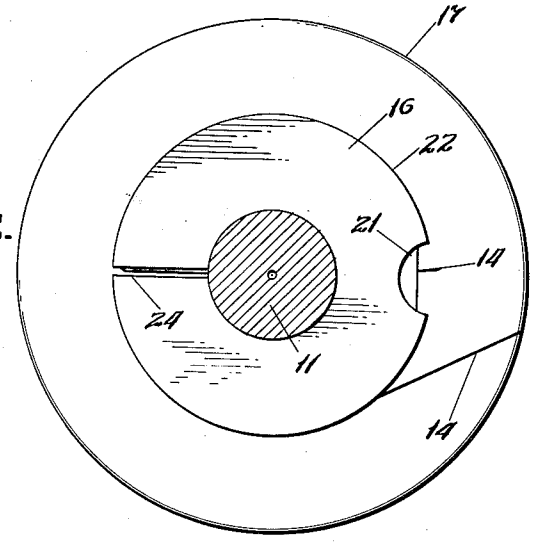


Fig. 2.



INVENTOR
JOHN K. COCHRAN

BY Darby & Darby
ATTORNEYS

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APPARATUS FOR SPINNING AND TWISTING TEXTILE YARNS

John K. Cochran, Conyngham, Pa., assignor to The Duplan Corporation, Hazleton, Pa., a corporation of Delaware

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4 Claims. (Cl. 57—58)

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This invention relates to apparatus for spinning and twisting yarns, and particularly to the yarn storage disc on the spindle assembly.

In spinning and twisting textile yarns a textile spindle is used having, in more recent forms, a yarn storage disc on the lower portion thereof about which the yarn is wrapped in passing from the spindle outwardly and upwardly to the take-up reel. Such a disc is disclosed and claimed in copending application Serial No. 8,346, filed February 14, 1948, now Patent No. 2,560,848, issued July 17, 1951, entitled Yarn Take Up Disc for Double Twist Spindle. The yarn in wrapping around the disc provides a snubbing action which equalizes tensions which exist during the spinning and twisting operation. In practice it is found that on numerous occasions breaks occur in the yarn. When such breaks occur it is common practice to replace the broken strand onto the take-up reel. It has been found that, due to static electricity and similar attractive forces, the strands of yarn adhere very closely to the storage disc so that when a break occurs it is difficult to readily find and remove the broken end. The take-up disc is mounted below the spindle and yarn package and also the spindle is mounted on a slant approximating 45° so that it is necessary for the operator to bend down and look up beneath the spindle and package in an attempt to find the broken end. In commercial practice such interruptions are of course extremely inconvenient and time consuming.

Therefore it is an object of this invention to provide an improved storage disc for a spindle for spinning and twisting textile yarns.

It is among the further objects of the invention to provide textile spindle apparatus which will facilitate the spinning and twisting operation and to provide a storage disc having means for readily removing a broken strand of yarn and leading the broken end out and away for restarting the twisting operation.

Other objects will be apparent after consideration of the following description, claims, and drawing, in which—

Figure 1 is a side elevational view of a present-day double twist spindle for textile yarns showing the yarn package on the spindle and the yarn on the storage disc;

Figure 2 is an enlarged view looking upwardly at the line 2—2 of Figure 1;

Figure 3 is an enlarged view of one portion of the storage disc with parts being broken away and shown in section; and

Figure 4 is an enlarged view similar to Figure 3 showing a modification.

Referring now more particularly to Figure 1, there may be seen a spindle assembly 11 having a package carrier portion 12 and supporting a yarn package 13. The yarn 14 passes upwardly

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from the package 13, thence downwardly into the open upper end 15 of the spindle assembly 11. The yarn 14 passes downwardly through the center of the spindle assembly 11 and transversely outwardly through a suitable opening provided in the yarn storage disc 16.

In operation the yarn 14 wraps itself several times spirally around the storage disc 16 on the smooth path 18 provided therefor, thence outwardly and upwardly across the yarn guide disc 17 to a take-up reel located above the spindle in axial alignment therewith (not shown). As pointed out previously, if a break in the yarn 14 occurs between the storage disc 16 and the take-up reel the strands of yarn which have been wrapped around the storage disc adhere very closely to the path or surface of the disc so that it is difficult to find and remove the broken end, particularly when there are multiple turns.

In accordance with this invention a bridged gap is provided in the yarn path on the storage disc. In the form shown a small portion is cut out of the edge of the storage disc 16 thus removing a short segment or notch and providing a gap 21. As may be seen by referring more closely to Figures 2 and 3, the lower flange 22 of the storage disc 16 preferably is likewise cut away. With this provision the yarn 14 bridges the gap 21 formed by the notch. Such a gap, in the yarn path provided by the storage disc, does not interfere with the normal operation thereof.

Preferably the notch is approximately the size of an average fingertip. The dimensions are not at all critical. It is the purpose of the notch to provide a gap in which the operator may readily insert his fingertip, thus readily removing the strands of yarn which are wound around the path of the storage disc 16. It need only be sufficiently deep so that the turns of yarn bridge the gap. With essentially no effort these various strands of yarn may be pulled away from the storage disc and the broken end thus readily found. The yarn, of course, is then withdrawn and the broken end replaced on the take-up reel located above the spindle.

While the dimensions of the notch are not critical, likewise the shape of the notch is not critical. Preferably the notch is provided in rounded form so as to conform more closely to the configuration of an average fingertip. It will be obvious, however, that, if desired, the notch may have other shapes.

Referring more specifically to Figures 3 and 4, it will be noted that the yarn path 18, on the edge of the storage disc 16, is located adjacent the yarn guide disc 17. Thus it may be desirable to provide, in the undersurface of the guide disc 17, a small indentation located adjacent the gap 21 in the storage disc 16. This is particularly desirable if the upper surface of the flat path

provided by the storage disc 16 is contiguous with the undersurface of the guide disc 17. Such an indentation is shown in the modification in Figure 4, identified by the reference numeral 23.

With the particular form of combination storage disc and guide disc shown in the drawings, the guide disc 17 forms an upper flange for the storage disc 16. When the indentation 23 is provided in the undersurface of this guide disc 17 it may be seen that the gap is provided throughout and beyond the yarn path on the edge of the disc. This facilitates the removal of the strands of yarn therefrom since it permits the fingertip to pass upwardly beyond the upper edge of the disc and insures that all of the strands may readily be withdrawn.

As mentioned previously, an opening is provided in the storage disc 16 for the passage of yarn transversely outwardly from the spindle assembly 11. Such an opening is shown in Figure 2, identified by the reference numeral 24. For mechanical balance in a rotating part, it is preferable that the gap 21 be provided in the edge of the disc 16 at a point diametrically opposite the opening 24.

While the preferred embodiments have been illustrated and described, it will be apparent to those skilled in the art that modifications are possible without departing from the scope of the invention.

What is claimed is:

1. Apparatus for spinning and twisting textile yarn comprising a spindle assembly including a yarn storage disc, said disc having a smooth flat edge forming a path for multiple single layer turns of the yarn, said edge having a notch in one portion thereof extending across said path, a channel in said disc extending radially from the center to said edge, said notch being diametrically opposite said channel.

2. Spindle apparatus for spinning and twisting textile yarn comprising a yarn storage disc, said disc having a flat edge forming a smooth path for multiple single layer turns of the yarn, said edge having a finger notch forming a gap in and extending across said path to be bridged by said yarn, said disc having a channel for said yarn extending radially from the center thereof to said edge, said notch being diametrically opposite said channel.

3. Spindle apparatus for spinning and twisting textile yarn comprising a storage disc and a guide disc, the edge of said storage disc forming a flat path for multiple single layer turns of said yarn and having a finger notch in one portion thereof, and said guide disc having an indentation in the undersurface thereof at a point adjacent said notch.

4. A storage disc for apparatus for spinning and twisting textile yarn, said disc having a smooth flat path for multiple single layer turns of said yarn, a flange on each side of said path and a notch extending across one portion of said path forming a gap to be bridged by said yarn, one said flange having an indented portion adjacent said gap.

JOHN K. COCHRAN.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
1,900,037	Bochmann et al.	Mar. 7, 1933
2,207,574	Bochmann	July 9, 1940