United States Patent

Korikovsky et al.

[15] **3,681,909**

[45] **Aug. 8, 1972**

[54] **SPINDLE HEADPIECE FOR THREAD SPINNING AND TWISTING APPARATUS**

[72] Inventors: **Petr Konstantinovich Korikovsky, Jury Semenovich Kulichkov,** all of Moscow, U.S.S.R.

[73] Assignee: **Vsesojuzny Nauchno-Issledovatelsky institut Leakogoi textilnogo mashinostroenia,** Moscow, U.S.S.R.

[22] Filed: **July 28, 1970**

[21] Appl. No.: **58,932**

[52] **U.S. Cl.** **57/106,** 57/18, 57/73

[51] **Int. Cl.** **D01h 1/00,** D01h 13/08

[58] **Field of Search**.....57/16, 17, 18, 73, 106

[56] **References Cited**

UNITED STATES PATENTS

2,542,184	2/1951	Egge	57/18
2,758,438	8/1956	Nau-Touron	57/106 X
3,328,946	7/1967	Schumann et al.	57/18

FOREIGN PATENTS OR APPLICATIONS

640,112	4/1962	Canada	57/73
734,785	8/1955	Great Britain	57/73
902,706	8/1962	Great Britain	57/73
931,610	7/1963	Great Britain	57/73
972,478	10/1964	Great Britain	57/73
633,971	2/1962	Italy	57/73

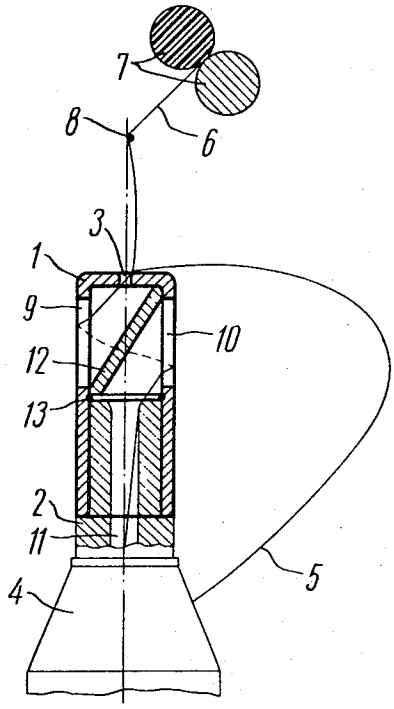
Primary Examiner—John Petrakes

Attorney—Holman and Stern

[57] **ABSTRACT**

A head-piece for use on a tubular spindle of spinning or thread-twisting apparatus for continuously twisting two threads for producing a supply of twisted yarn; the head-piece including means for preventing counter-twisting of the threads due to internal stresses and tension on the threads when the apparatus is braked, for example, whereby snags, loop knitting faults etc. are substantially obviated and improved efficiency and product-quality are achieved; the head-piece being generally tubular and axially communicating with a tubular spinning mandrel, the head-piece including a central opening and generally diametrically opposed lateral openings whereby threads are progressively disposed in a path starting from the central opening, out of one lateral opening, exteriorly of the head-piece and back into the other lateral opening to pass therefrom axially through the spindle; the head-piece including partitions; tubular sleeves with internal slots, and specially conformed slots to keep the threads from counter-twisting.

7 Claims, 3 Drawing Figures



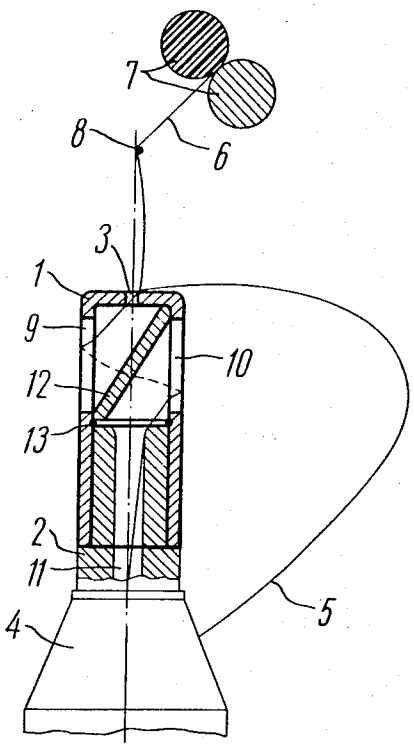


FIG. 1

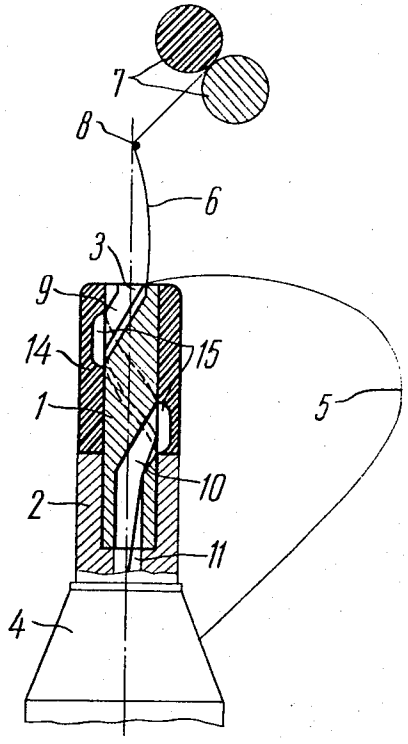


FIG. 2

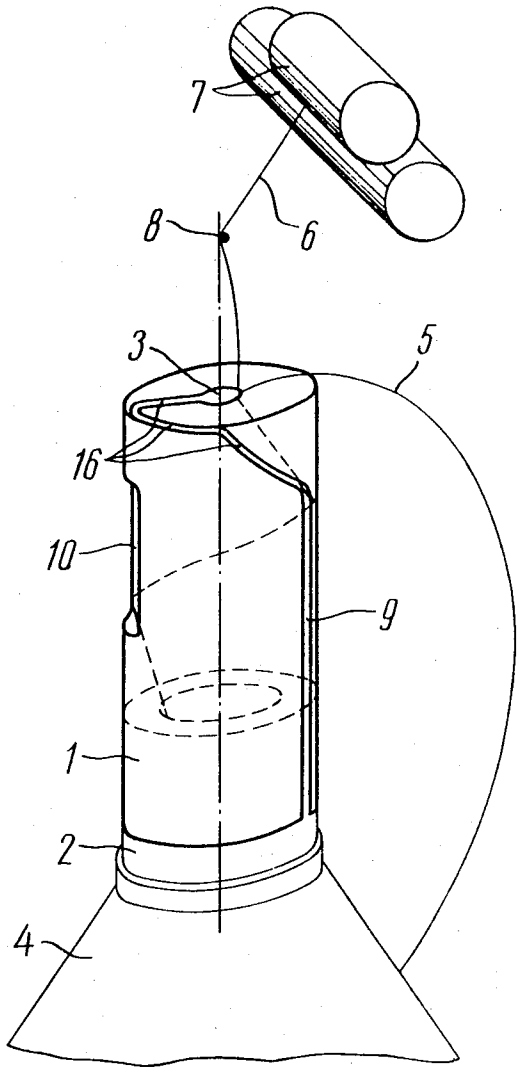


FIG. 3

SPINDLE HEADPIECE FOR THREAD SPINNING AND TWISTING APPARATUS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to thread twisting components of spinning or twisting, frames, and more specifically to means for preventing twisted threads from untwisting on these components.

This invention can be most successfully used in the manufacture of yarn with a large number of twists, as well as of mixed yarn and yarn of elastic fiber, such as wool.

2. Description of the Prior Art

At present, the twisting components on cop of threads mounted in spinning and twisting frames consists of a spindle with a cop of threads mounted on a rotating hollow mandrel; the thread being payed out and passing into an axial channel in the mandrel; issuing from the drafting system of the frame is the another thread which is twisted during the spindle rotation, and also passes into the channel of the mandrel; both threads are twisted together, thus forming twisted yarn, which is then wound onto a receiving bobbin.

During the spindle rotation the thread unwound from the package or cop forms a balloon, causing both threads being spun to be urged toward the wall of the axial channel of the rotating spindle mandrel; tension is generally provided to prevent their untwisting.

However, when the frame is stopped, the balloon drops, and the threads are no longer pressed to the walls of the mandrel channel. As a result, the threads being spun tend to untwist under the effect of the elastic forces imposed by the twisting, making several reverse revolutions about its axis in a direction opposite to the direction of twist. The supply of yarn also untwists, and the unwound thread winds thereon, forming in place of the balloon knots or similar faults, this subsequently affects the quality of yarn.

There are no devices to remedy this trouble.

In the prior art, these yarn faults are eliminated by once again rewinding the yarn, removing discarded sections during the rewinding process this is very inconvenient, and costly.

SUMMARY OF THE INVENTION

The basic object of the invention is to provide an assembly, that prevents the thread from untwisting when the spinning frame is stopped, thus ensuring fine quality of yarn, and at the same time featuring a simple design.

With this object in view, means are provided to prevent untwisting of thread in the twisting component. According to the invention, there is provided a headpiece mounted in the top part of the twisting component; the head-piece and having a central hole for entry of both threads, and at least two holes, in its lateral sides, through which the threads are successively threaded, after which the twisting threads pass through the axial channel of the mandrel of the twisting component.

The head-piece may include a partition separating the side holes from each other.

Another embodiment includes a sleeve on the headpiece, which sleeve has an inner slot connecting the side holes of the head-piece.

Another embodiment comprises a head-piece having an inclined shaped slot connected on one side with the central hole, and on the other side with one of the lateral holes.

Details of the invention will become apparent from the following description of exemplary embodiments when taken in conjunction with the appended drawings, forming a part thereof, wherein:

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 shows the a head-piece in section according to the invention, the mounted on a fragmentary portion of a spindle of a spinning and twisting frame; (the latter not being shown)

FIG. 2 shows another embodiment of the head-piece; and

FIG. 3 shows still another embodiment of the head-piece.

DESCRIPTION OF PREFERRED EMBODIMENTS

The arrangement to prevent untwisting of thread comprises a head-piece **1** (FIG. 1) mounted on a rotatable spindle **2** and having a central hole **3** to accommodate thread **5** unwound from package or cop **4**, and thread **6** issuing from delivery rolls **7** and passing through thread guider guide **8**.

On the lateral side of the head-piece **1** are holes **9** and **10**, of which hole **9** serves to permit threads **5** and **6** to pass out of head-piece **1** about the outer surface, through hole **10** - which guides these threads into axial channel **11** of the mandrel of spindle **2**. The twisted threads continue to a receiving and winding arrangement (not shown). Inside head-piece **1** is mounted a sloping partition **12** partially separating the side holes **9** and **10** from one another. This partition is retained inside the head-piece by means of a snap ring spring **13**.

In another version of the arrangement, on headpiece **1** is a sleeve **14** (FIG. 2) having an inner slot **15** connecting the side holes **9** and **10**.

For conveniently threading of threads **5** and **6**, headpiece **1** has an inclined shaped slot **16** (FIG. 3) connected on one side with the central hole **3**, and the other side communicating with the later hole **9**.

Threading the thread **5** in the arrangement shown in FIG. **1** is accomplished as follows:

Spindle **2** is braked. Thread **5** is wound off from package or cop **4** on this spindle, and in the form of a loop it is threaded using a flexible pin successively through the central hole **3**, side holes **9** and **10**, then into channel **11** of the mandrel of spindle **2**, and to suitable receiving and winding arrangement (not shown). When the spindle is started, the free end of the loop of thread **5** is joined or wound about thread **6** issuing from the delivery rolls **7**.

Threading the arrangement shown in FIG. **2** is similar to that described above, but to simplify the threading process the head-piece is provided with sleeve **14** having the inner slot **15** connecting the side holes **9** and **10** of head-piece **1**, which permits in addition to threading using a flexible pin, using pneumatic threading to guide the loop of thread **5** through the central and side holes **3, 9, 10** and further through the spindle channel **11** to a receiving and winding arrangement (not shown).

Threading with the head-piece shown in FIG. **3** is accomplished as follows after spindle **2** is stopped, thread

5 is wound off package 4, and by means of a flexible pin or air, thread in a loop form is guided from outside the head-piece 1, through the side hole 10 into the spindle channel 11 and further to a receiving and winding arrangement (not shown). Then a double section of thread 5 remaining outside the head-piece is wound clockwise along the surface of the head-piece and passed through the shaped slot 16 guided into the central hole 3. As the spindle is started, the free end of the loop of thread 5 is joined to thread 6 issuing from the delivery rolls 7.

In all its three versions the head-piece operate in the same manner.

Spindle 2 rotates together with package 4 and head-piece 1; thread 5 unwinds from package 4 and enters the central hole 3, while the spinning thread 6 is; thread 6 also enters the central hole 3. Joining each other at the central hole 3, threads 5 and 6 pass through hole 9 to the outer side surface of head-piece 1, wind thereabout at an angle; pass and through hole 10, and enter channel 11 of the spindle, they are twisted together with a number of twists equaling that of the spinning thread 6, but opposite in direction.

When the twisting frame is stopped, tension on twisted thread 6, provides and pressure of threads 5 and 6 urge them against the side or outer surface of head-piece 1 or within the section between the side holes 9 and 10, thus preventing untwisting of the threads and formation of loop-knots where they pass through the head-piece.

What we claim is:

1. An apparatus for spinning and twisting threads including a tubular, rotary spindle for carrying a supply of a first thread; means directing a second thread to pass; axially through the spindle to be twisted with said first thread; and a head-piece mounted on said spindle for preventing counter-twisting of the threads; the improvement wherein: said head-piece comprises a member including a central opening at one end and

communicating with the tubular spindle at the other end,

said head-piece including at least two lateral openings in spaced relation on side portions of said member whereby said threads being twisted together are continuously drawn through said central opening, out of one lateral opening, exteriorly of said head-piece member into said other lateral opening and axially through said spindle, and said head-piece prevents counter-twisting of said threads when rotation of the spindle is halted.

2. The structure as claimed in claim 1 in which said head-piece includes partition means separating said lateral openings.

3. The structure as claimed in claim 1 in which said head-piece includes means removably retaining said partition means in said member.

4. The structure as claimed in claim 1 in which said head-piece includes an outer tubular sleeve having an internal slot extending between and communicating with said lateral openings.

5. The structure as claimed in claim 4 in which said head-piece comprises a generally solid axial element, said lateral openings being spaced axially of said solid element, said internal sleeve-slot terminally communicating with said lateral openings.

6. The structure as claimed in claim 1 in which said head-piece member includes a threading slot communicating at one end with said central opening and continuing radially therefrom, said threading slot continuing in the outer surface of said member and terminally communicating with at least one of said lateral openings.

7. The structure as claimed in claim 1 in which said head-piece member is cylindrical and said central opening is disposed on the axis of rotation thereof, said lateral openings being in substantially diametrically opposed relation.

* * * * *