June 9, 1942. E. C. KONTZ, JR 2,285,667

UNWINDING THREAD

Filed April 26, 1941 2 Sheets-Sheet 1

Fig. 1,

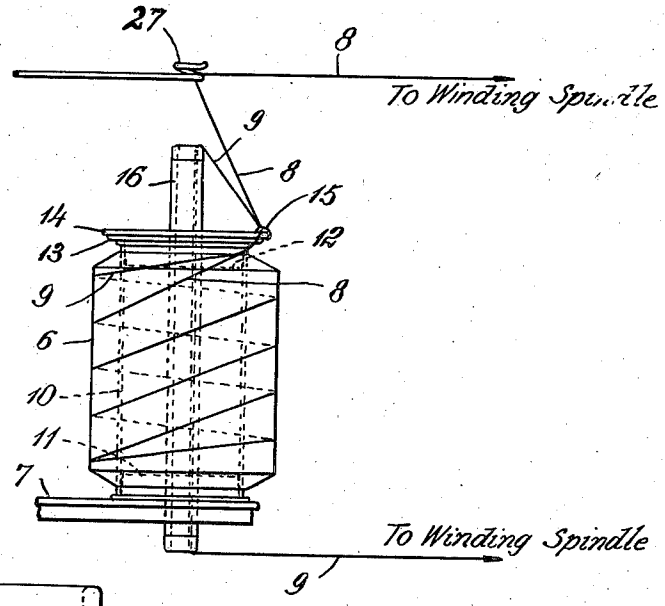


Fig. 2,

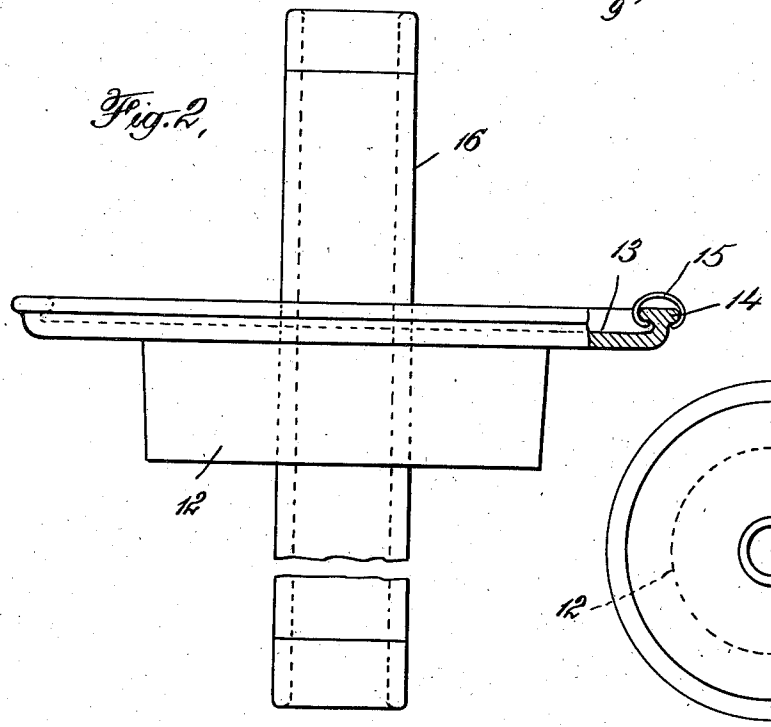
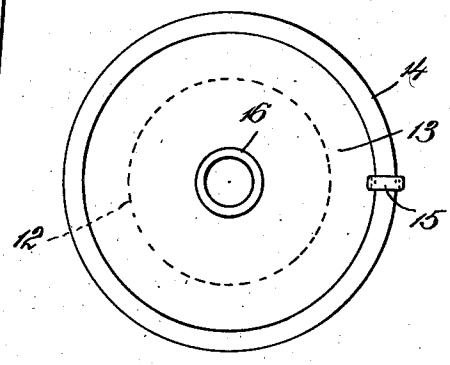


Fig. 3,



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Fig. 4,

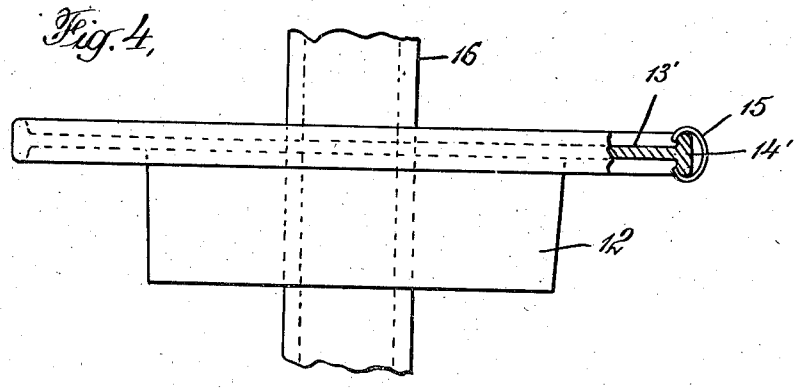
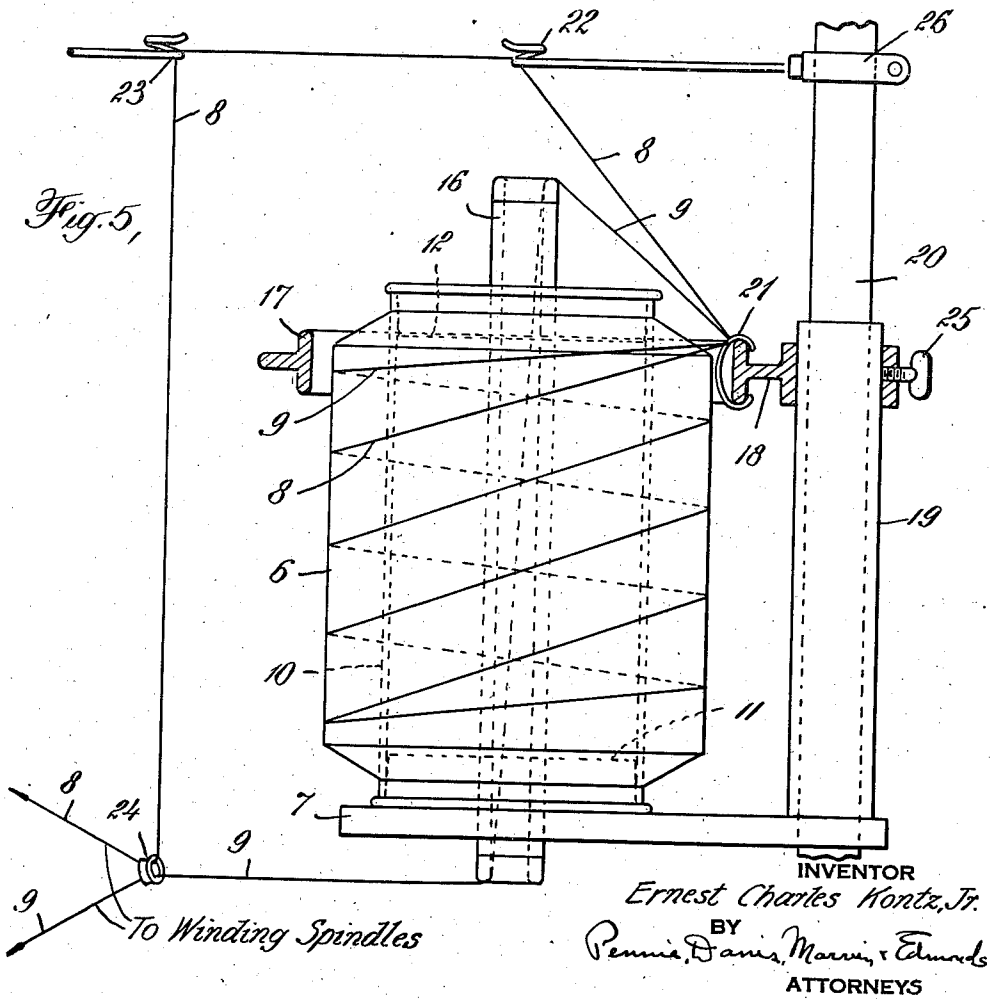


Fig. 5,



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UNWINDING THREAD

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Application April 26, 1941, Serial No. 390,550

11 Claims. (Cl. 242—128)

This invention relates to the unwinding of thread, and more particularly to the unwinding of two separate threads from a single package. The invention aims to provide an improved method of and apparatus for unwinding two separate threads from a single package. Throughout the specification and the appended claims, "thread" is used generically to include filaments, threads, yarns and the like, and "package" is used generically to include thread on bobbins or other means of supporting a package made up of two separate threads.

It is often advantageous in spinning rayon, more particularly in bobbin spinning, to wind two separate threads, from two separate spinnerettes or from a single spinnerette, into a single package on one bobbin. At some subsequent stage in the treatment of the threads, usually when the after-treatment is completed and the threads are to be wound into cones or other commercial packages or otherwise handled as two independent threads, it is necessary to unwind the two threads from the single package for subsequent handling as individual threads. The present invention is concerned with this operation of unwinding two threads which have been wound on a single package, and rewinding each thread in a separate package or otherwise handling the two threads individually.

In accordance with the invention, the two threads are simultaneously drawn at the same speed from the single package through a common traveler arranged to move freely in a substantially circular path approximate the package, one of the threads being drawn from the traveler through the center of the package and the other thread being drawn from the traveler through a guide therefor. The two threads, after being drawn respectively through the center of the package and the guide, may then be handled individually, as two independent or separate threads. With the customary annular thread package appropriately supported with its hollow axis vertical, the two threads are simultaneously drawn at the same speed over one end of the package and through the common traveler. Thence, one of the threads passes through a guide suitably positioned approximate the traveler while the other thread passes through the center of the package. Throughout the unwinding, the two threads stay in the same relative positions with respect to each other, and neither leads or lags behind the other to any objectionable extent. Thus, the threads are unwound without danger of twisting together, and can be subsequently handled as individual threads.

The invention will be better understood from the following description taken in conjunction with the accompanying drawings, in which

Fig. 1 diagrammatically illustrates the method and apparatus of the invention applied to the unwinding of an annular thread package,

Fig. 2 is an elevation, partly in section, of the traveler, cooperating ring and tubular center guide of Fig. 1,

Fig. 3 is a plan of the elements shown in Fig. 2,

Fig. 4 is an elevation, partly in section, of a slightly modified form of traveler and cooperating ring, and

Fig. 5 is a side elevation of another form of apparatus embodying the invention.

Referring to Fig. 1 of the drawings, the annular thread package 6 is appropriately supported on a bracket or base 7. The package is made up of two separate threads 8 and 9 wound on a cylindrical bobbin 10. The thread package is centered on the base 7, with its hollow axis vertical, by lower and upper caps 11 and 12, respectively, fitting into the ends of the bobbin.

The upper cap 12 is preferably integral with and depends from a circular ring 13, similar in construction to the ring on a textile ring twisting machine. The upper edge of the ring has a T-shaped race or traveller-guide 14. A traveler 15 is sprung over the race 14 and is free to move on the race around the ring. The traveler may be a small piece of wire or the like bent in the shape of the letter D. In placing the traveler on the race, one end is placed under one side of the race and the other end is then sprung under the other side of the race, leaving the traveler loose and free to move around the race. A tubular guide 16 is secured to the base 7 in the center of the yarn package, with its ends extending below and above the ends of the package.

In the practice of the invention, the two threads 8 and 9 are simultaneously drawn at the same speed from over the end of the package 6 through the traveler 15. The thread 8 passes from the traveler through a guide 27, positioned above the thread package, and onto a winding spindle or the like. From the traveler 15, the thread 9 passes downwardly through the tubular guide 16, and thence through the center of the package 6, and onto the same or a second winding spindle or the like. The winding spindle (or spindles) may be part of any conventional winding apparatus, such as a high speed warp beaming machine, a ring twisting machine, a coning

machine and the like. It will be understood that the two threads after being unwound from the package and passing respectively through the tubular guide 16 and the guide 27 may be handled as individual threads. Thus, the two individual threads may be taken up on separate spindles, or on a single spindle, such as a warp beam, or any other device where it is desired to lay the two threads parallel on a single spindle. The two threads may also be drawn off from the single package by the feed-roll of a twister machine.

As the unwinding of the two threads proceeds, the traveler rotates rapidly around its cooperating ring. Should one thread lead the other by any great extent the pull of the traveler will tend to put a greater tension on the leading thread and will also tend to pull the lagging thread along with it. The action is such that the two threads are maintained substantially together throughout the unwinding operation. By the method of the invention, two very fine threads can be unwound from a single package at rates up to and even higher than 500 yards per minute.

Various types and forms of travelers and cooperating rings may be used in carrying out the invention. The traveler 15 illustrated in Figs. 1, 2 and 3 is of the conventional type used on a textile ring twisting frame and can be secured in a wide variety of different weights. In Fig. 4 of the drawings, the race or traveler-guide 14' is at the circumferential edge of the ring 13'. The traveler 15 is of the same construction as in Figs. 1, 2 and 3, and is sprung around the race 14' in the same manner as in those figures.

In Fig. 5 of the drawings, the thread package 6 is wound on the bobbin 10, and supported on the base 7 by the lower centering cap 11, as in Fig. 1. The tubular center guide 16 is attached to the base 7. A ring 17, of larger diameter than the thread package, is carried by a ring holder 18 attached to the upper end of a tubular sleeve 19. The sleeve 19 surrounds the upright post 20 of the assembly, and can be swung around the post as well as up and down thereon. The post 20 also carries the base 7. The ring holder 18 may be vertically adjusted with respect to the sleeve 19 by means of a screw 25, thus enabling adjustment of the vertical plane of the ring so that it may be placed at the most desirable operating position.

A traveler 21, of a type commonly used on conventional ring twisting machines, is free to move around the inner side of the ring 17. The two threads 8 and 9 are simultaneously drawn from the package through the traveler 21. From the traveler, the thread 8 passes upwardly through a guide 22, outwardly through a guide 23, and then downwardly through a guide 24 to a winding spindle. The other thread 9 passes from the traveler 21 downwardly through the tubular guide 16, then through the guide 24 to a winding spindle. The guide 22 is attached to the post 20 by a clamp 26 permitting vertical and lateral adjustment of the guide. It will be evident that the two threads may be handled separately as individual threads after leaving the guide 24. Moreover, it is not necessary that the two threads be drawn through the common guide 24, since the thread 8 may be drawn directly from the guide 22 to a winding spindle or the like.

The apparatus illustrated in Fig. 5 permits the ring 17 and holder 18 to be swung out into doffing position. With this type of ring, the threads 8 and 9 may be broken at the traveler in doffing the machine. The threads from the new bobbin may then be tied to the old threads before being drawn through the guides 22 and 16, thus eliminating the necessity of threading the guide and tube each time the machine is doffed, thereby greatly speeding up the operation. This type of ring and traveler also pulls the thread from the bobbin in such a way as to prevent the thread from excessive dragging over the shoulder of the bobbin, pulling the thread away from the bobbin instead of dragging it over the bobbin, thus preventing excessive sluffing.

I claim:

1. The improvement in unwinding two separate threads from a single package which comprises simultaneously drawing the two threads at the same speed from the package in a substantially circular path approximate the package, one of said threads being drawn from the circular path through the center of the package and the other of said threads being drawn from the circular path through a guide therefor, and handling the two threads individually after being drawn respectively through the center of the package and from said guide.

2. The improvement in unwinding two separate threads from a substantially annular single package which comprises simultaneously drawing the two threads at the same speed from the package in a path substantially concentric with the package, one of said threads being drawn from the path through the center of the package and the other of said threads being drawn from the traveler through a guide therefor, and handling the two threads individually after being drawn respectively through the center of the package and from said guide.

3. The improvement in unwinding two separate threads from a substantially annular single package which comprises simultaneously drawing the two threads at the same speed from the package through a common traveler arranged to move freely in a circular path substantially concentric with the package, drawing one of said threads from the traveler through a guide above the package and onto a winding spindle, and drawing the other of said threads from the traveler downwardly through the center of the package and onto a second winding spindle.

4. The improvement in unwinding two separate threads from a substantially annular single package which comprises simultaneously drawing the two threads at the same speed from the package through a common traveler free to move around a cooperating ring concentrically positioned approximate one end of the package, one of said threads being drawn from the traveler through the center of the package and the other of said threads being drawn from the traveler through a guide therefor, and handling the two threads individually after being drawn respectively through the center of the package and from said guide.

5. The improvement in unwinding two separate threads from a substantially annular single package which comprises simultaneously drawing the two threads from the package through a common traveler free to move in a circular path concentrically surrounding the package approximate one end thereof, one of said threads being drawn from the traveler through the center of the package and the other of said threads being drawn from the traveler through a guide therefor, and handling the two threads individually after being drawn respectively through

the center of the package and from said guide.

6. The improvement in unwinding two separate threads from a single package which comprises simultaneously drawing the two threads at the same speed over the upper end of the package through a common traveler free to move around a cooperating ring concentrically positioned approximate the upper end of the package, one of said threads being drawn from the traveler downwardly through the center of the package and the other of said threads being drawn from the traveler through a guide positioned above the package, and handling the two threads individually after being drawn respectively through the center of the package and from said guide.

7. In an apparatus for unwinding two separate threads from a substantially annular single package, a support for the package, means adapted to draw the two threads from the package at the same speed, a ring adapted to be operatively mounted approximate the upper end of the package and substantially concentric therewith, a traveler having a passage therethrough freely movable around said ring, means permitting one of the threads of said package to be drawn through the passage in the traveler and through a guide therefor, and means permitting the other thread of said package to be drawn through the passage in the traveler and through the center of the package.

8. In an apparatus for unwinding two separate threads from a substantially annular single package, a support for the package, a ring operatively mounted on said support and adapted during unwinding of the threads to be concentrically positioned with respect to the package on said support, a traveler having a passage therethrough freely movable around said ring, means for drawing the two threads over one end of the package and through the passage in the traveler at the same speed, and means permitting the two threads to be handled individually after being drawn through the passage in the traveler including a guide extending through the center of the package for one thread and a guide positioned approximate one end of the package for the other thread.

9. In an apparatus for unwinding two separate threads from a substantially annular single package, a support for the package, a ring operatively mounted on said support and adapted during unwinding of the threads to be concentrically positioned with respect to the package on said support, a traveler freely movable around said ring under the pulling action of one of the threads, a guide for the thread which pulls the traveler positioned approximate said traveler, and a tubular thread guide operatively arranged in the center axis of the package when positioned on said support through which the other thread is drawn.

10. In an apparatus for unwinding two separate threads from a substantially annular single package, a support for the package, a ring operatively mounted on said support and adapted during unwinding of the threads to be positioned around the package approximate one end thereof, a traveler freely movable around said ring under the pulling action of one of the threads, a guide positioned above said traveler for receiving the thread which pulls the traveler, and a tubular guide for the other thread of the package mounted on said support and extending through the center of the package when positioned on the support.

11. In an apparatus for unwinding two separate threads from a single package, a support for the package, a ring adapted to be operatively positioned approximate one end of the package during unwinding of the threads, a traveler having a passage therethrough freely movable around said ring, means for drawing the two threads over one end of the package and through the passage in the traveler at the same speed, and means permitting the two threads to be handled individually after being drawn through the passage in the traveler including a guide extending through the center of the package for one thread and a guide positioned approximate one end of the package for the other thread.

ERNEST CHARLES KONTZ, JR.

CERTIFICATE OF CORRECTION.

Patent No. 2,285,667. June 9, 1942.

ERNEST CHARLES KONTZ, JR.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, second column, line 34, claim 2, for the word "traveler" read --path--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of July, A. D. 1942.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)