

[54] **CARRIER FOR PACKAGES OF TEXTILE YARN**

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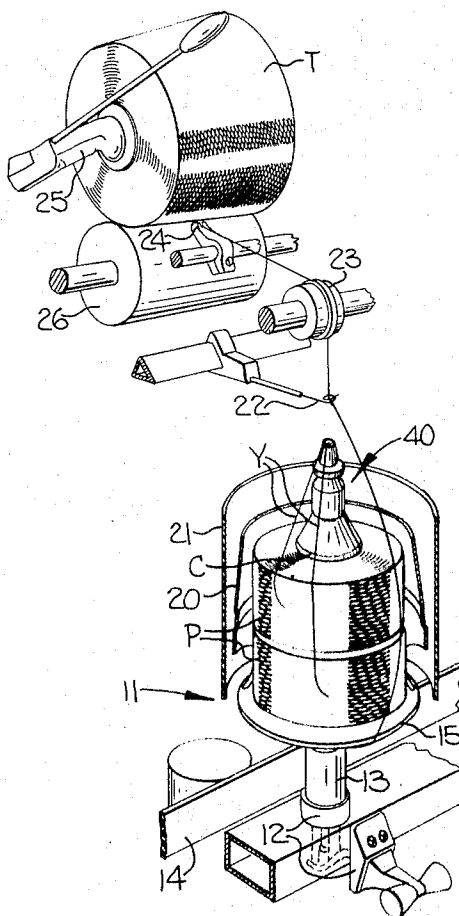
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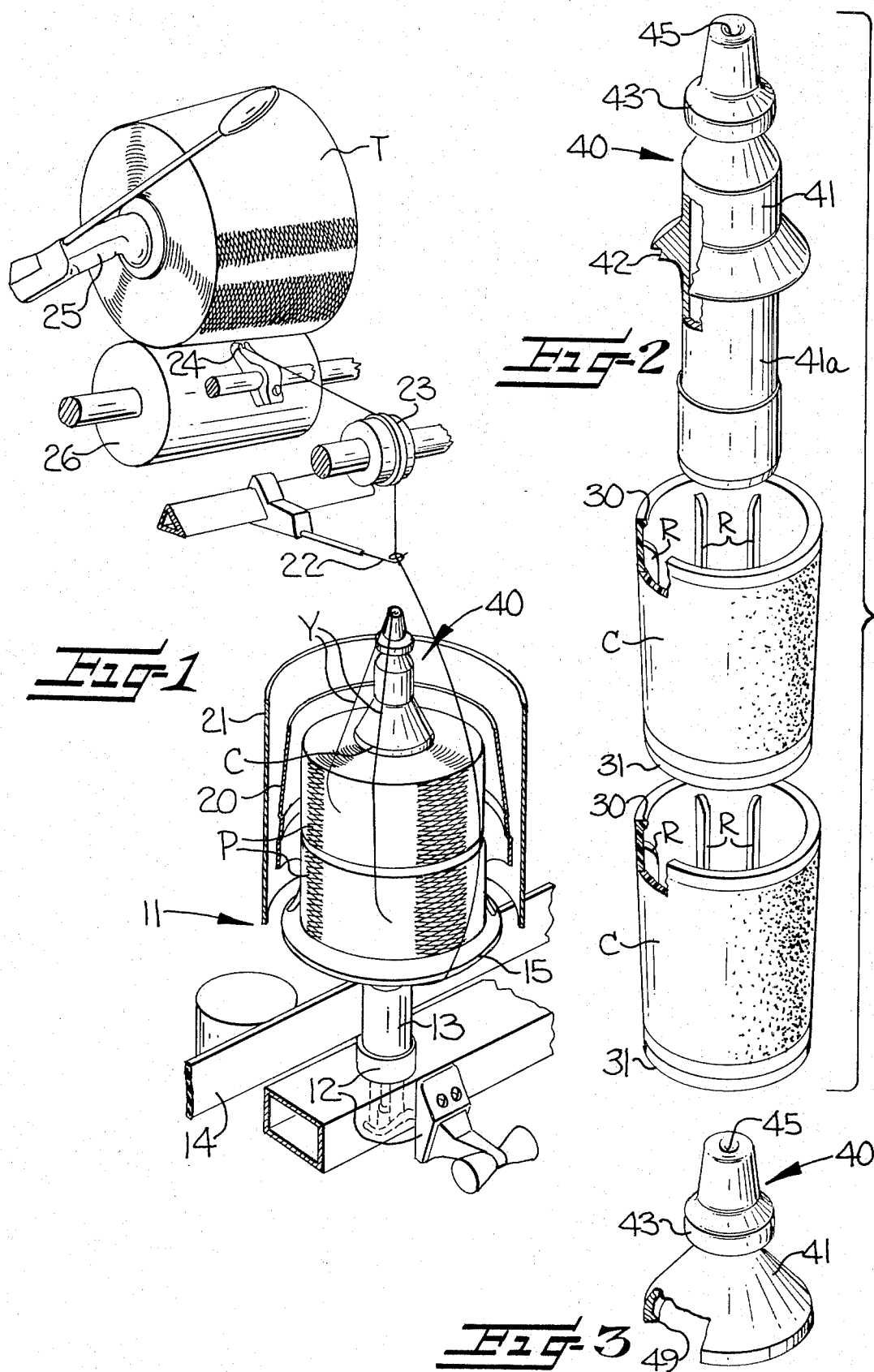
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[57] **ABSTRACT**

A carrier for packages of yarn wound on hollow, elongate cores having cooperating means at each end thereof for axially, detachably interlocking at least two cores together for providing superimposed packages of yarn for simultaneous or successive withdrawal of yarn therefrom for further processing. The carrier is particularly adaptable for inserting the yarn packages in and withdrawing the yarn packages from a spindle assembly having a basket mechanism of a textile yarn twister. The carrier comprises a generally elongate body portion, means on the body portion cooperating with the interlocking means on one end of the cores for axially, detachably interlocking the carrier with the interlocked yarn package cores, and means on the body portion for manually gripping and handling the carrier and interlocked yarn packages without touching the yarn for mounting and withdrawal of the yarn packages in a textile machine.

8 Claims, 5 Drawing Figures





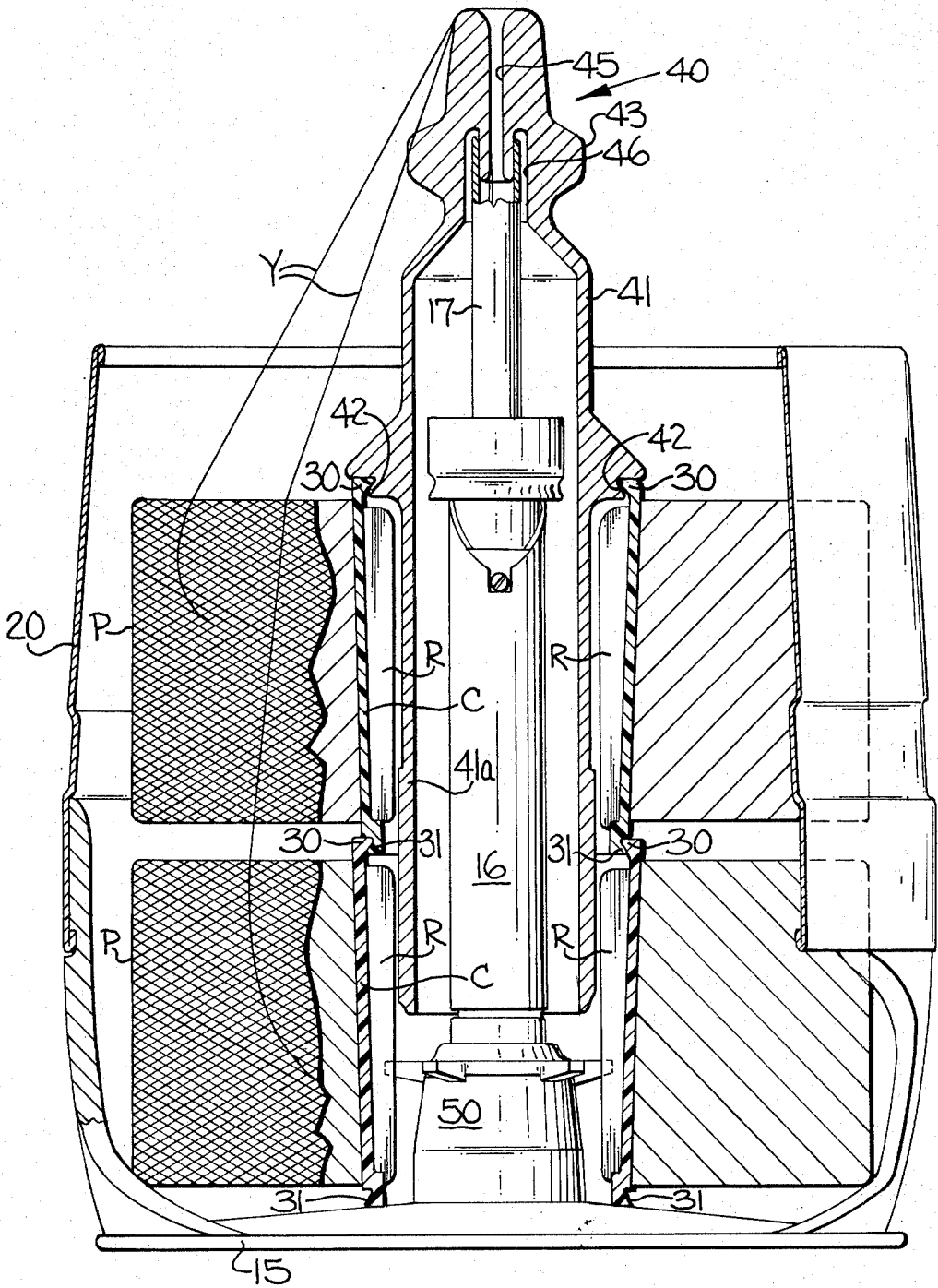


Fig. 4

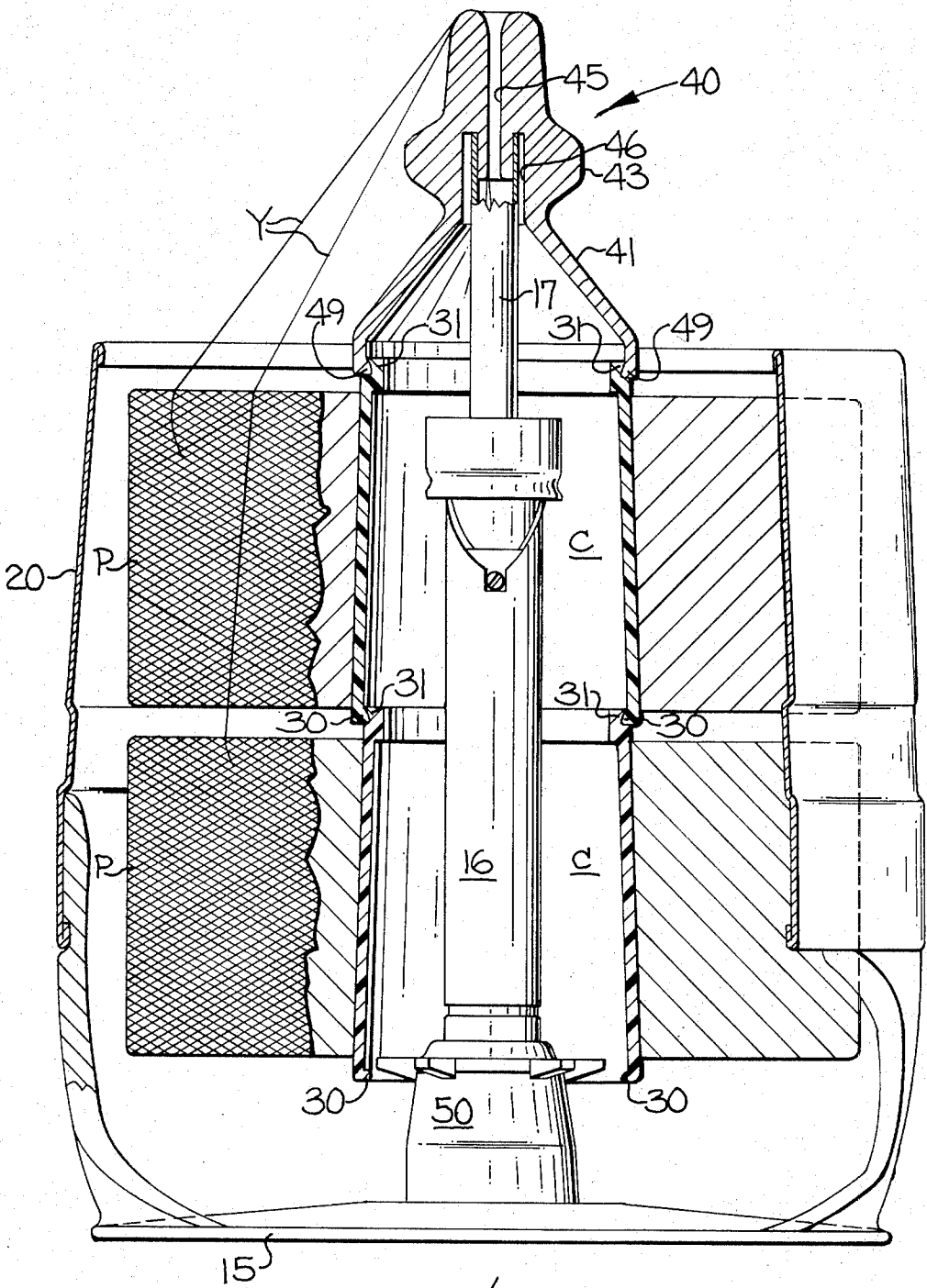


FIG-5

CARRIER FOR PACKAGES OF TEXTILE YARN

This invention relates to a carrier for packages of yarn wound on hollow, elongate cores which are axially and detachably interlocked together so that the carrier may interlock with the interlocked packages for handling and mounting of the interlocked packages without touching the yarn.

In textile yarn processing machines, particularly twisters and more particularly two-for-one twisters in which yarn supply packages are mounted on a spindle assembly having a stationary basket surrounding the supply packages, problems have long been presented of handling of the yarn packages, during insertion or mounting of the packages in the spindle mechanism, piecing up of a broken yarn during withdrawal of yarn from the yarn packages, and other handling of the yarn packages without touching the yarn.

This problem is particularly acute when it is desired to insert two superimposed yarn packages or "cheeses" in the spindle assembly and within the basket mechanism. When such superimposed yarn packages are utilized, they may be of the type having cores including cooperating means at each end of the cores for axially, detachably interlocking at least two cores together. Although this type of core and package assembly provides axially interlocked packages of yarn, it does not provide a means for handling these packages without touching the yarn on the packages. The touching of the yarn, of course, may tangle the yarn and cause malfunctioning of the withdrawal operation of the yarn from the packages.

Accordingly, it is the object of this invention to provide an improved carrier for packages of yarn wound on axially, detachably interlocked cores for providing easy handling of the interlocked packages of yarn.

It has been found by this invention that the above object may be accomplished by providing a carrier for packages of yarn wound on hollow, elongate cores having cooperating means at each end thereof for axially, detachably interlocking at least two cores together for providing superimposed packages of yarn for simultaneous or successive withdrawal of yarn therefrom for subsequent processing. The carrier comprises a generally elongate body portion, means on the body portion cooperating with the interlocking means on one end of one of the cores for axially, detachably interlocking the carrier with the interlocked yarn package cores, and means on the body portion for manual gripping and handling of the carrier and interlocked yarn packages without touching the yarn for mounting and withdrawal of the yarn packages in a textile machine.

Preferably, this interlocked carrier and yarn packages is used in a textile processing machine, such as a twister having a spindle assembly for containing one or more supply packages of yarn for withdrawal for further processing and including a rotating spindle mechanism, a yarn entry tube and hollow axle mechanism and a stationary basket mechanism for surrounding the supply packages of yarn.

Some of the objects of this invention having been stated, other objects will appear as the description proceeds when taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a schematic perspective view, partially broken away, of a two-for-one textile yarn twister utilizing the interlocked carrier and superimposed yarn packages of this invention;

FIG. 2 is an exploded view of one form of carrier and empty package cores which may be interlocked together in accordance with this invention;

FIG. 3 is a perspective view, partially broken away, of another form of carrier according to this invention which may be utilized with the interlocking yarn package cores illustrated in FIG. 2;

FIG. 4 is an elevational view, partially in section and partially broken away, of the interlocked carrier of FIG. 2 and yarn packages mounted in a spindle assembly of the twister of FIG. 1; and

FIG. 5 is a view like FIG. 4 showing the use of the form of carrier illustrated in FIG. 3.

Referring now to the drawings, there is illustrated in FIG. 1 a schematic perspective view of one twisting station of a two-for-one textile yarn twister, generally indicated by the reference numeral 10. This two-for-one twister 10 generally comprises a spindle assembly, broadly indicated by the reference numeral 11.

This spindle assembly includes a spindle brake mechanism 12, a rotating spindle mechanism including a whorl 13 driven by drive belt 14 and a rotating disc mechanism 15, a hollow axle 16 and aligned yarn entry tube 17 (see FIGS. 5 and 6) forming a passageway for yarn Y withdrawn from supply packages P mounted stationary on the hollow axle 16 and yarn entry tube 17 device. The yarn Y from the entry tube 17 and hollow axle 16 passes through and is twisted by the action of the rotating spindle mechanism. The spindle assembly 11 further includes a stationary basket mechanism 20 surrounding the packages P of yarn Y. The yarn Y, as it passes from the rotating spindle device and is twisted thereby, passes around the stationary basket 20 and within a surrounding balloon limiter mechanism 21 to a pigtail 22, to a pre-takeup 23, to a traverse thread guide 24 and onto a takeup package T mounted on a suitable cradle mechanism 25 and driven by friction roller 26.

The above briefly described components of a twisting station of a typical two-for-one textile yarn twister are well understood by those with ordinary skill in the art and further explanation herein is not deemed necessary.

In this textile yarn twister 10, it is often desirable to simultaneously withdraw yarn from two superimposed yarn packages P or "cheeses," as shown in FIGS. 1, 4 and 5. When utilizing these superimposed packages P of yarn Y for simultaneous withdrawal of supply yarn for twisting together and winding on takeup package T, it is important that these superimposed packages P be held in an axially aligned position with the yarn entry tube 17 and hollow axle 16 mechanism. It may be appreciated that, in the event of breakage of the yarn Y and during entry or removal of the packages P from within the basket mechanism 20 of the spindle assembly 11, access to the yarn packages may not be had from the side and it is difficult to handle and mount the yarn packages within the basket mechanism 20 without touching of the yarn which may cause misalignment of the yarn on the packages P and therefore malfunctioning of the twisting operation.

In accordance with this invention, it is desirable to utilize yarn packages P which have elongate, generally cylindrical cores C including means 30 and 31 on opposite ends thereof for axially, detachably interlocking the cores C and packages P with each other. The cores C may be formed of any deformable plastic material or other material and the interlocking means 30 and 31 at each end thereof may include male tongue or ribs 30 and female grooves or depressions 31, as shown in FIGS. 2, 4 and 5 particularly. These interlocking means may, of course, be of other suitable arrangements such as bayonet locking means or other locking means, so long as the cores C of the packages P are adapted for axial, detachable interlocking with each other in the manner shown in FIGS. 4 and 5.

In accordance with this invention, there is further provided a carrier 40 for handling of the interlocked yarn packages P for mounting and withdrawal of the yarn packages in the twister 10 within the basket mechanism 20 of the spindle assembly 11. Two embodiments of a suitable carrier 40 are illustrated in FIGS. 2 and 4 and FIGS. 3 and 5, respectively. Referring to the embodiment of FIGS. 2 and 4 first, the carrier 40 comprises a generally elongate body portion 41 which may be of any suitable shape, means 42 on the body portion 41 for cooperating with the interlocking means 30 on one end of the core C for axially, detachably interlocking the carrier with the interlocked yarn package cores C. This interlocking means 42 may comprise any suitable interlocking means depending upon the type of interlocking means utilized on the core C. In the embodiment shown in FIGS. 2 and 4, this interlocking means comprises a female groove or depression for reception of the male tongue or rib 30 on one end of the core C.

The carrier 40 further comprises means 43 on the body portion 41 for manual gripping and handling of the carrier and thus the interlocked yarn packages P so as to avoid touching of the yarn for mounting and withdrawal of the yarn packages in the twister 10. This means 43 may comprise a knob-like or other shaped projection for easy manual gripping.

The body portion 41 of the carrier 40 further defines an internal axial passageway 45 for alignment with the yarn entry tube 17 so that the yarn Y withdrawn from packages P can pass through the internal passageway 45 and into the entry tube 17 and hollow axle 16. The body portion 41 of the carrier 40 is generally hollow and may include an annular passageway 46 for receiving the upper end of the yarn entry tube 17 of the spindle assembly 11 of the twister 10 so as to mount the carrier 40 and interlocked yarn packages P on the top of the entry tube 17, in the manner shown in FIG. 4, and so that the passageway 45 will be telescoped into the yarn entry tube 17.

In accordance with the embodiment of the carrier 40 shown in FIGS. 2 and 4, the body portion 41 includes an elongate, hollow extension 41a for extending into the hollow cores C of the packages P and at least slightly beyond the interlock 30 and 31 between the hollow cores C. This arrangement will reinforce and prevent accidental detachment of the interlocked cores C. Additionally, the cores C may include inwardly extending, longitudinal ribs R which cofunction with the extension 41a of the body portion 41 of the carrier 40 for reinforcing the interlock between the core C.

For centering and aligning the bottom portion of the interlocked packages P and carrier 40, a centering device 50 may be positioned over the hollow axle 16 so that when the interlocked carrier 40 and packages P are positioned in the spindle assembly, the centering mechanism 50 will fit inside the bottom interlocked core C and center these interlocked members with respect to the hollow axle 16. Any suitable type of centering mechanism 50 may be utilized.

Referring now to the alternative embodiment of the carrier 40 illustrated in FIGS. 3 and 5, like reference numerals have been applied to the carrier of this embodiment to refer to like components, described above with respect to the embodiment of FIGS. 2 and 4, and these like components will not be additionally described here. The embodiment of FIGS. 3 and 5 differs from that of FIGS. 2 and 4 by eliminating the extension 41a of the body portion 41 for ease in assembly and by providing a male interlocking tongue or rib 49 in lieu of the female groove 42 utilized in the embodiment of FIGS. 2 and 4. However, any suitable type of interlocking means may be utilized depending upon the type of interlocking core C provided. In this embodiment, the core C and packages P would merely be inverted so that a female interlocking means 31 would be on the upper end of the interlocked core C.

Thus, it may be seen that by this invention two forms of carriers 40 have been provided which will easily interlock with interlocked cores of superimposed yarn packages for easy handling of the yarn packages for mounting and withdrawal of the yarn packages in a textile machine, such as a two-for-one twister, without touching of the yarn on the packages P.

In the drawings and specification there have been set forth preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation.

That which is claimed is:

1. A carrier for packages of yarn wound on hollow, elongate cores having cooperating means at each end thereof for axially, detachably interlocking at least two cores together at one end of each core for providing superimposed packages of yarn for simultaneous or successive withdrawal of yarn therefrom for subsequent processing; said carrier comprising:

a generally elongate body portion;

means on said body portion cooperating with the interlocking means on the other non-interlocked end of one of the cores for axially, detachably interlocking said carrier with the interlocked yarn package cores; and

means on said body portion for manual gripping and handling of the carrier and interlocked yarn packages without touching the yarn for mounting and withdrawal of the yarn packages in a textile machine.

2. A carrier, as set forth in claim 1, in which said body portion extends axially into the interlocked hollow yarn package cores at least slightly beyond the interlock of the cores for supporting and preventing undesirable detachment of the interlock between the cores.

3. A carrier, as set forth in claim 1, in which said body portion terminates substantially at said interlocking means thereon for ease in interlocking and detaching.

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4. A carrier, as set forth in claim 1, in which said body portion defines an internal, axial passageway for the reception and passage of yarn therethrough from the yarn packages for subsequent processing.

5. In a textile yarn processing machine, such as a twister or the like, having a spindle assembly for containing one or more supply packages of yarn for withdrawal for further processing and including a rotating spindle mechanism, a yarn entry tube and hollow axle mechanism and a stationary basket mechanism for surrounding the supply packages of yarn; the improvement of a carrier for packages of yarn wound on hollow, elongate cores having cooperating means at each end thereof for axially, detachably interlocking at least two cores together at one end of each core for providing superimposed packages of yarn for simultaneous or successive withdrawal of yarn therefrom for subsequent processing, said carrier comprising

a generally elongate body portion

means on said body portion cooperating with the interlocking means on the other non-interlocked end of one of the cores for axially, detachably interlocking said carrier with the interlocked yarn

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package cores, and means on said body portion for manual gripping and handling of the carrier and interlocked yarn packages without touching the yarn for mounting the yarn packages in and withdrawing the yarn packages from the basket mechanism.

6. In a textile yarn processing machine, as set forth in claim 5, in which said body portion extends axially into the interlocked hollow yarn package cores at least slightly beyond the interlock of the cores for supporting and preventing undesirable detachment of the interlock between the cores.

7. In a textile yarn processing machine, as set forth in claim 5, in which said body portion terminates substantially at said interlocking means thereon for ease in interlocking and detaching.

8. In a textile yarn processing machine, as set forth in claim 5, in which said body portion defines an internal, axial passageway for alignment with the yarn entry tube and hollow axle mechanism for the reception and passage of yarn therethrough from the yarn packages for subsequent processing.

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