

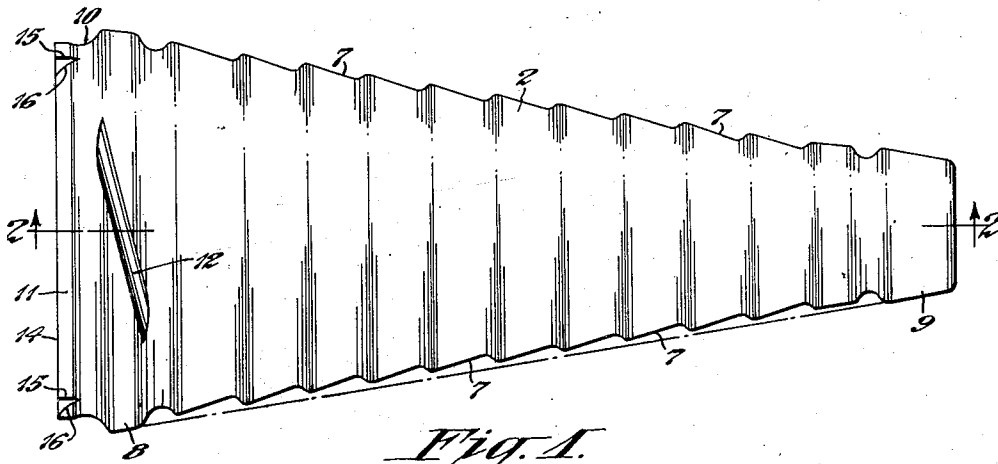
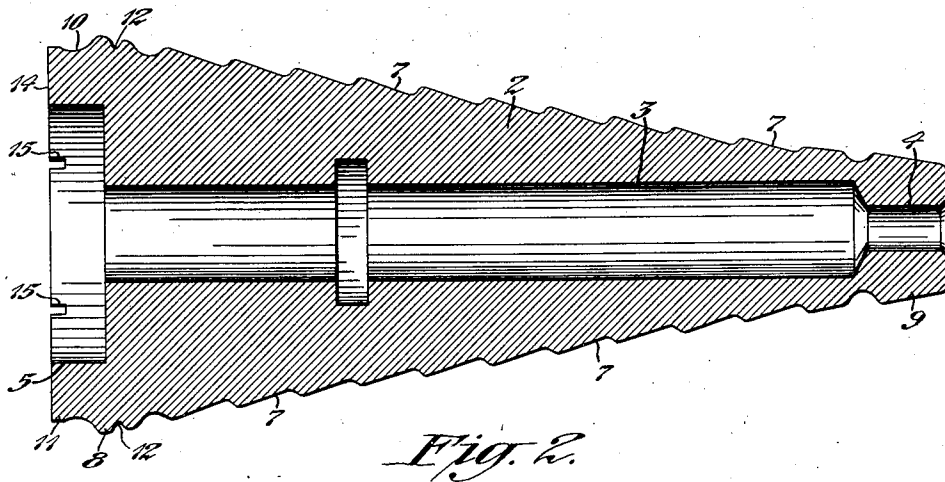
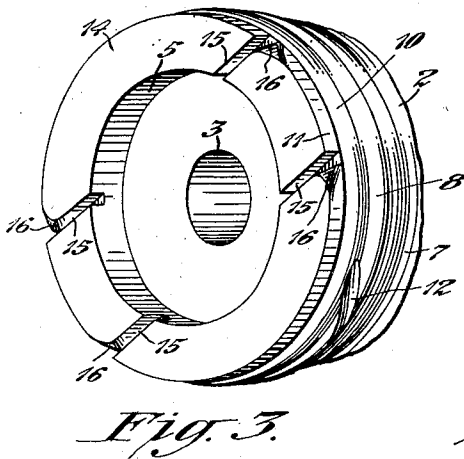
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WOODEN CONE AND LIKE YARN SUPPORT

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WOODEN CONE AND LIKE YARN SUPPORT

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3 Claims. (Cl. 242-122)

This invention relates to improvements in yarn-carriers or package-supports for use in winding conical, cylindrical and other forms of yarn packages on drum-driven winding machines.

In the following specification and claims the term "yarn" is used in a broad sense to apply to thread, yarn and other strand materials generally; and the term "package" is also employed in a generic sense as applying to any form of a yarn body or mass.

One object of the present invention is to provide a yarn-carrier or package-support on which the yarn may be wound without subjecting it to pressure and frictional rubbing action during the initial stages of the winding before the coils are cushioned by underlying courses or layers.

Another object of the invention is to provide a yarn-carrier or package-support having annular abutments or raised bearing portions on its surface which bear against the driving-drum during the initial stages of the winding to prevent the first courses of yarn from contacting with the drum.

Another object of the invention is to provide, in a yarn-carrier or package-support of the type specified, means for holding a reserve supply of yarn at one end of the carrier to adapt it to be unwound and spliced to the leading end of another package when the yarn is to be delivered from a magazine creel or like supply-holder.

Another object of the invention is to provide, in a yarn-carrier or package-support of the type specified, means whereby a length of yarn may be drawn from the reserve supply to the yarn-receiving portion of the support across the end abutment or bearing portion of the latter and lodged in a groove or channel to prevent this length of yarn from contacting with the drum to be mashed or otherwise injured by such contact.

Another object of the invention is to provide, in a yarn-carrier or package-support of the type specified, means for holding the initial end of the yarn stretched across the end face of the carrier and retained in a slit, with said slit so formed as to prevent its edge from catching and breaking the yarn when it is withdrawn therefrom.

Further objects of the invention are set forth in the following specification which describes a preferred form of construction of the yarn-carrier or package-support, by way of example, as illustrated by the accompanying drawing. In the drawing:

Fig. 1 is a side view of a conical form of yarn-

carrier or package-support constructed in accordance with the present invention;

Fig. 2 is a sectional view of the same taken through the axis of the support on line 2-2 of Fig. 1; and

Fig. 3 is a perspective view showing one end of the yarn-carrier or package-support.

The present invention comprises a core or support for a yarn-package having any usual shape, for example, taking a frusto-conical form, as represented in the accompanying drawing, to adapt it for supporting tapered packages usually termed "cones".

As one feature of the invention, the periphery of the yarn-carrier or package-support is provided with circumferential abutments at the ends having a greater diameter than the adjacent portions of its main yarn-receiving body, whereby the peripheries of said abutments will rest on the drum or drive-roll of the winding machine during the initial stages of the winding to effect driving contact therebetween. Through this arrangement the first courses or layers of winding are relieved of the frictional rubbing action of the drum to prevent flattening, crushing, mashing or abrasion of the yarn and ultimately, when sufficient yarn has been wound on the support between the abutments to cushion the overlying layers, the abutments become inoperative and the surface of the yarn mass itself contacts with the drum to effect the driving action. Further details of the improvement are set forth hereinafter.

Referring to the drawing, 2 designates a yarn-carrier or package-support of frusto-conical form which may be constructed of wood, fiber, composition or, in other cases, of heavy cardboard or paper. As herein shown the cone or support is constructed of solid material, such as wood or fiber, with an axial bore 3 for receiving the winding-spindle or arbor on which the support rotates in contact with the periphery of a driving-drum in accordance with the well-known practice. The main bore 3 of the support 2 is preferably of a diameter to adapt it to be received on anti-friction rolls or bushings on the winding-spindle, which latter projects through a smaller bore 4 at the small end of the support. At the base-end of the support 2 the bore is enlarged to form a circular recess or cavity 5 which receives a collar or abutment on the spindle acting to take the thrust of the support in one direction, while suitable means are provided at the outer end of the spindle for holding the support in place thereon and taking the thrust at this end.

The peripheral surface of the tube or support 2 is preferably scored or corrugated circumferentially to provide conical steps, indicated at 7, which prevent the first turns or coils of yarn wound on the support from sliding down the incline or slipping out of place. In accordance with one feature of the present invention the opposite ends of the support are provided with enlarged circumferential abutments or annular bearing portions 8 and 9, the peripheral surfaces of which conform to the general conical contour of the support but are of larger diameter or raised above the intermediate yarn-receiving surface of the support. The dot-and-dash line in Fig. 1 indicates the manner in which the end abutments or annular bearing portions 8 and 9 bear against the peripheral surface of the drive-roll or drum which rotates the support to wind on the yarn, also illustrating the space surrounding the support between the end abutments which is filled with yarn during the first stages of the winding to provide a cushion for succeeding courses which bear directly on the surface of the driving-drum.

For adapting the package wound on the present improved form of support for use in a magazine creel, wherein the supply units have the last-wound end on one package spliced to the leading end of a reserve package to provide for a continuous delivery of the material, it is usual to provide means at the base-end of the support for receiving a few turns of the yarn to be used in splicing it to another package in the series. Such means may comprise a shallow groove or annular channel, indicated in the drawing at 10, formed on the reduced end-portion 11 of the support. After a few turns of yarn have been wound or coiled in the groove 10 at the end of the support 2 a length must be led to its main yarn-receiving surface and, as one feature of improvement in the present invention, I provide a groove 12 for the yarn cut through the periphery of the abutment or bearing portion 8 of the support. The groove 12 is preferably inclined at an angle to the axis of the support 2, conforming generally to the spiral or helical direction of the coils of winding laid on the main surface of the latter.

The purpose of the groove or recess 12 is, as before stated, to avoid drawing the length of yarn across the raised peripheral surface of the abutment or bearing portion 8 of the support where it would be subjected to a mashing or abrading action by the drum on which the bearings 8 and 9 contact during the initial stages of the winding. The purpose in disposing the groove 12 at an inclination to the axis of the support in the manner described is to make provision for a free and easy withdrawal of the length of yarn therefrom as the last coils unwind from the surface of the support; and further to avoid a break or interruption in the bearing surface of the abutment 8 which might cause jumping and vibration of the support on the periphery of the driving-drum. Stated briefly, the sides of the groove 12 are inclined at a sharp angle to the sides of the circumferential abutment 8 so that one side always overlaps the other, viewing them longitudinally of the support, whereby a full circumference of the abutment will always be available for contact with the driving-drum to insure against chattering or bumping of the support on the drum.

While two oppositely arranged yarn-receiving grooves 12 are shown in the present drawing a greater number of the same may be provided if desired so that any one of them may be used to receive the length of yarn extending from the

channel 10 to the main portion of the support, thus obviating the necessity of turning the tube to locate a groove.

With yarn-carriers or package-supports of the present type it is a common practice to provide slits or notches 15 in the end face 14 of the support, in which the end of the yarn may be lodged to hold it in convenient position for seizing in the fingers when it is to be tied or magazined to the end of another package or supply unit in a series. The slits 15 may extend laterally across the end face of the support 2, being cut through its rim portion which surrounds the enlarged cavity 5 therein. As a further feature of improvement in the present invention the outer ends of the slits 15 are rounded off or chamfered at one side, as indicated at 16 in Fig. 3 of the drawing, the object of this form of construction being to eliminate sharp edges underlying the yarn as it emerges from the slits to be drawn into the circumferential groove 10 wherein the reserve coils are wound. It will be noted that the rounded or chamfered edges 16 are on the sides of the slits 15 from which the yarn extends toward the groove 10 on the reduced end-portion 11 of the support 2.

Having now described one preferred form of construction of the present improved yarn-carrier or package-support, the method by which it is applied to use will next be explained. In starting to wind a package on the support 2 the operator inserts the end of the yarn into one of the slits 15 in its end face 14, and leading it across the chamfered edge thereof draws it into the groove 10 to coil a few turns around the reduced end 11 of the support. The yarn is then drawn through the inclined groove or recess 12 and carried to the thread-guide of the winding machine after the support has been placed on the winding-spindle in the manner as previously explained.

With the package-support 2 mounted to rotate on the winding-spindle the latter is placed in position to bring the circumferential surface of the annular abutments or bearing portions 8 and 9 against the periphery of the drum or drive-roll. The support 2 will then be rotated by frictional contact with the surface of the drum to wind the yarn onto the main portion of the support intermediate the end bearing portions or abutments 8 and 9. As the support 2 is rotated from the driving-drum the thread-guide traverses the yarn between the end abutments 8 and 9 to deposit it in helical turns which cross and recross each other in the well-known manner of a "Universal" wind.

During the initial stages of the winding the peripheries of the abutments or bearing portions 8 and 9 of the tube will continue in contact with the surface of the driving-drum until a sufficient number of courses or layers of the yarn coils have been deposited to fill the space between the recessed surface of the support 2 and the circumference of the drum, indicated by dot-and-dash line in Fig. 1. At this point in the winding the surface of the wound yarn mass will of itself make contact with the drum and thereafter the support 2 will be rotated by this direct contact of the package on the drum with the abutments or bearing portions 8 and 9 ceasing their contact and becoming inoperative. As the winding continues the pressure of the drum on the yarn is cushioned by the first layers of coils wound on the support between the abutments 8 and 9 so that there will be very little tendency to flatten

and crush the yarn or to abrade its surface as would be the case if the first turns of the winding were compressed between the hard face of the support 2 and the surface of the driving-drum.

In this manner the present improved yarn-carrier or package-support serves to eliminate the deleterious action of the driving-drum on the yarn during the initial stages of winding the package whereby to prevent injury to the material or impairment in its quality. The present invention is particularly well adapted for winding soft, lofty yarns which may not be subjected to any considerable flattening or frictional abrasion without damaging the material.

The improved yarn-carrier or package-support is herein shown and described in a preferred form of construction but it is to be understood that various modifications may be made in its shape and contour without departing from the spirit or scope of the invention. Therefore, without limiting myself in this respect, I claim:

1. A package-support having a main body-portion with enlarged annular abutments at its ends between which the yarn is wound and a reduced portion at one end around which a few turns of

reserve yarn may be coiled, said support formed with a groove extending from its reduced end-portion across the periphery of the adjacent annular abutment to provide a channel for a length of yarn leading from the reserve coils to the main winding.

2. A package-support having an elongated body-portion on which the yarn is wound and raised annular abutments at either end thereof adapted to bear against the driving-drum during the initial stages of the winding, one end of the support being annularly grooved to adapt it to receive a few coils of reserve yarn wound thereon and the raised abutment at this end of the support being formed with a groove adapted to receive a length of yarn leading from the reserve coils to the main winding on the support.

3. A yarn-support of the type specified having a slit extending laterally across its end face and chamfered on its side adjacent the periphery of the support whereby a length of yarn may be held in the slit to extend therethrough to the periphery of the support without causing it to be cut or broken where it leads across the edge of the slit.

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