Aug. 29, 1933. E. F. PARKS 1,924,510

YARN SUPPORT OR COP TUBE

Filed March 11, 1931

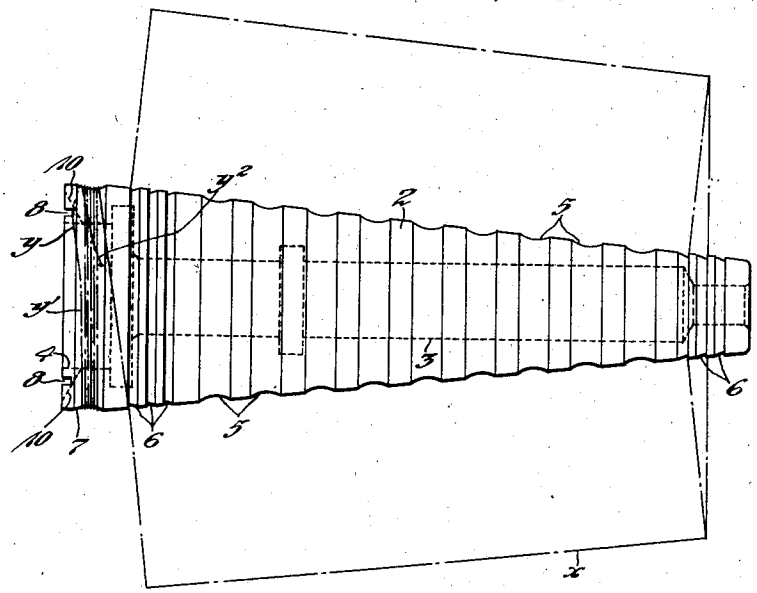

Fig. 1.

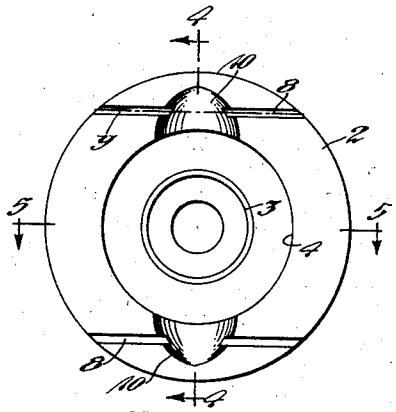

Fig. 2.

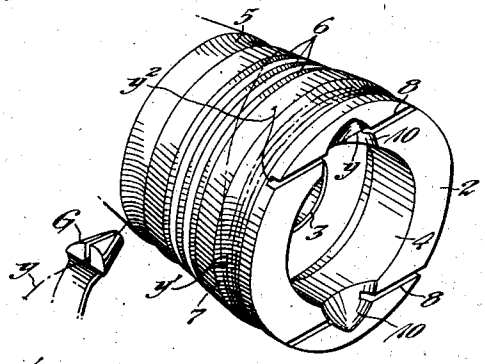

Fig. 3.

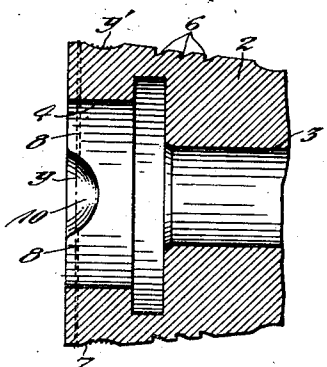

Fig. 5.

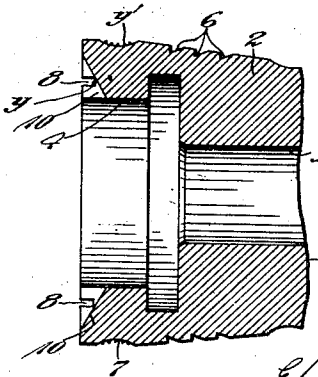

Fig. 4.

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Patented Aug. 29, 1933 1,924,510

UNITED STATES PATENT OFFICE

1,924,510

YARN-SUPPORT OR COP-TUBE

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Application March 11, 1931. Serial No. 521,838

5 Claims. (Cl. 242—125)

This invention relates to the textile art and particularly to wound masses of yarn, thread and other strand materials for use as supplies on creels or the like in transferring the material to various processes.

The invention comprises an improved yarn-support or cop-tube for the yarn mass or package, so constructed as to facilitate the manual operation of magazining a plurality of supplies by splicing the last-delivering end of the yarn in one package to the leading end of another supply.

In the following specification and claims the term yarn is employed to designate all varieties of strand material and the term cop-tube is intended to apply to all forms of yarn-supports, while the word package is to be construed broadly as indicating any type of yarn body.

A principal object of the present invention is to provide means for holding the first end of the yarn wound into the supply package to render it readily accessible in a length suitable for splicing to the end of the yarn in another supply in a series.

Another object of the invention is to provide a yarn-support or cop-tube of the type specified having means whereby the first end of the yarn may be bound to the support by a plurality of turns wound around its end portion with a length of the yarn extending across the base of the support and accessible to be grasped by the operator to unwind the yarn for splicing.

Another object of the invention is to provide a yarn-support or cop-tube of the type specified having a circumferential recess or groove at its end in which a length of the yarn is wound, a cross slit in which the end of the strand is held and a depression or notch extending across the slit to adapt the operator's finger to be inserted thereinto to grasp the yarn held in the slit.

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

Fig. 1 is a side view of the present improved cop-tube or yarn-support, showing in diagram a conventional form of package wound thereon and illustrating the arrangement for holding the end of the yarn which is used for splicing;

Fig. 2 is an end view of the cop-tube or yarn-support;

Fig. 3 is a perspective view of the end of the cop-tube;

Fig. 4 is a sectional view of the tube on line 4—4 of Fig. 2; and

Fig. 5 is a sectional view of the same on line 5—5 of Fig. 2.

In the present era of high-speed operation of textile machinery, consideration must be given to the manual operations performed by the attendants and it is necessary to provide for greater facility and convenience of these operations in order to increase the capacity of the operator and the productiveness of the machine.

In the processes of winding, warping, beaming, reeling and spooling yarn and thread, creels or like devices are employed for holding a plurality of supplies and in accordance with modern practice the supplies are "magazined" in the creel to deliver the material continuously without arresting the transfer operation to doff and replenish the supplies. As is well known to those versed in the art, the supplies are magazined by tying or splicing the last-delivering end of the yarn in one cop or package to the leading end from a reserve package so that the strand will deliver continuously from a plurality of supplies without a halt for recreeling fresh packages. In other words, the doffing and recreeling may be accomplished during the continuous operation of winding, warping, reeling, beaming or spooling, the yarn on the fresh supplies being spliced to the last ends of the delivering packages before the yarn on the latter is exhausted. The supplies may be magazined in groups of two or more in accordance with requirements and the limitations of available space. With this method of transferring yarn and other textile materials it is desirable that the operator shall tend a maximum number of supplies and the present invention contemplates a method and means for disposing lengths of yarn in connection with the wound supplies with the ends convenient of access whereby to facilitate and expedite the operation of uncoiling the end from one package and splicing it to the end of another.

The present drawing illustrates the improved yarn-support or cop-tube in the form of a frusto-conical core or holder, upon the surface of which the yarn may be wound to produce a cone-shaped package, as best suited for delivery of the material without rotation of the supply in accordance with the present preferred practice. The cop-tube 2 may be constructed of wood, fiber or any other suitable material and, as herein shown, it is scored or grooved circumferentially to provide a fluted periphery having tooth-like serrations at its ends. The flutes 5 and serrations 6 act to

prevent the first coils of yarn wound on the tube from slipping or sliding out of place and thus contribute to the formation of a more secure and stable mass. The tube 2 is bored axially at 3 to adapt it to be mounted on a winding-spindle, mandrel or other support and its base is counterbored at 4 to provide a relatively large cavity at this end.

At the base end of the cop-tube 2 is a circumferential groove 7, preferably of concave formation. The first end of the yarn y is wound into the groove 7 to the extent of several coils to provide a length suitable for tying or splicing to the leading end of the next package in the series to be magazined. Extending transversely of the base end of the tube 2 there is provided one or more slits 8 adapted to receive the end of the length of the yarn wound in the groove 7. The end of the yarn y is first drawn through the slit 8 and held under the thumb or finger in position extending across the groove 7 so that a number of turns y' of the strand may be wound or coiled in the groove 7 to bind or tie down the end y^2.

In accordance with the present improvement a depression or finger-notch 10 is formed in the end of the tube 2 at one side of its counterbore 4, the notch extending across the slit 8 substantially midway between its ends. The notch 10 is of greater depth than the slit 8 where it intersects the latter and is preferably inclined outwardly toward the periphery of the tube 2.

As shown in the present drawing the cop-tube 2 is formed with two opposite slits 8 with a finger-notch 10 intersecting each, the provision of a plurality of slits being for greater convenience so that the operator is not required to turn the tube in the hand but may use the slit which is most accessible and, if desired, additional slits may be provided.

The present improved cop-tube is applied to use in the manner as next explained. In starting the winding of a supply cop or package the operator grasps the tube 2 in one hand, and picking up the end of the strand y with the other hand places it under the thumb or finger of the hand holding the tube. The yarn is then drawn across the groove 7, through the slit 8 and coiled around the end of the cop-tube in the recess or groove 7 with several turns y' crossing the end y^2 to hold the latter in place. The tube 2 is then applied to the winding machine by slipping it onto the spindle and securing it thereto with a latch or detent-means as usually provided. The yarn leading from the supply to the tube 2 is laid across the thread-bail of the winding machine, not herein shown, and the winding operation is then started by placing the tube 2 in contact with the surface of the drive-roll or drum; or in other cases by throwing the lever to effect the rotation of the winding-spindle. As the cop-tube 2 starts to rotate it will wind on the yarn and the strand will be picked up by the thread-guide G, shown in Fig. 3, as the latter is reciprocated longitudinally of the winding-spindle along the tapered surface of the tube. The reciprocation of the thread-guide G traverses the yarn back and forth between the ends of the cop-tube 2 to deposit it thereon in helical coils which build up overlying layers to produce a yarn mass of conical form as illustrated by the dot-and-dash lines x in Fig. 1.

It is to be understood that the present type of tube is adapted for use on winding machines in which the package is rotated by a positively driven winding-spindle or wherein the turning of the tube and the package wound thereon is effected by peripheral contact thereof with a drive-roll or drum. It is likewise to be understood that the cop-tube may take different forms to adapt it as a core or support for cylindrical or other shapes of packages, all within the purview of the present invention.

After the package is completed it is doffed from the winding-spindle for use on the creel or other supply-holder where it is magazined with other supplies of the same type. Before applying the package to the creel-spindle the first end of the yarn is retrieved for splicing and in accordance with the present improvement this is accomplished in a most facile and convenient manner. The operator holds the package in one hand while a finger of the other hand is inserted into the counterbore or opening 4 at the base end of the tube 2 and carried through the finger-notch 10. The end y^2 of the strand is thus seized and grasped between the fingers whereby it may be drawn out from under the coils y' which have previously held it in place during the winding operation. The grasping of the end of the strand may be accomplished with a single movement of the hand and this movement continued to unwind the coils y' from the groove 7 to afford a length of yarn sufficient for splicing to the leading end from a reserve supply placed in adjacent position on the creel or other supply-holder.

It will thus be seen that the present invention provides a simple yet ingenious means for holding the first end of the yarn wound into the package to furnish a length suitable for splicing to the end from a reserve package, and in such manner that the end is prevented from becoming lost or covered up and hidden by the layers of winding in the package. Furthermore, the end to be spliced is held in convenient position at the end of the cop-tube with provision made for easy access thereto to expedite the operation of unwinding the coils from the groove 7. Thus the motions of the operator's hands required for retrieving and unwinding the end are reduced to the minimum to economize in time and conserve physical energy, whereby to materially increase the capacity of the attendant in creeling and magazining the large number of supplies usually required for warping and beaming operations. The saving of time and effort results in greater speed of recreeling, permitting one operator to tend more supplies while the warping operation is performed at maximum speed with a resulant increase in productiveness and concurrent economy in cost of operation.

While the improved device is herein described and illustrated in a preferred form of construction it is to be understood that various modifications may be made in the structure and arrangement thereof without departing from the spirit or scope of the invention. Therefore, without limiting myself in this respect, I claim:

1. A support for packages of yarn or the like comprising a substantially hollow core provided with a recess in its end, a slit extending across the end of the core outwardly beyond the marginal edge of the recess to adapt it to receive the end of the yarn wound on the core, and a finger-depression extending from the rim of the recess across the slit and of greater depth than the latter.

2. As a new article of manufacture, a cop-tube formed with an axial bore and an enlarged counterbore in its end, a slit extending laterally of the end of the tube, at one side of the counterbore, and a radially extending finger-notch in-

tersecting the slit and of greater depth than the latter.

3. An improved cop-tube formed with a longitudinal bore and an enlarged counterbore at its end, a slit extending across the end of the tube at one side of the counterbore, and a finger-notch extending from the marginal rim of the counterbore across the slit.

4. An improved holder for yarn-packages or the like formed with a longitudinal bore and an enlarged counterbore at its end, a slit extending across the end of the holder and located outwardly beyond the marginal rim of the counterbore, and a finger-notch cut through the annulus surrounding the counterbore to intersect the slit at a greater depth than the latter.

5. An improved holder for yarn-packages or the like having an axial bore with an enlarged counterbore at its end, a slit cut through the annular end portion of the holder surrounding the counterbore, and a finger-notch extending radially from the marginal rim of the counterbore across the slit and inclined from a point within the counterbore outwardly towards the periphery of the holder.

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