

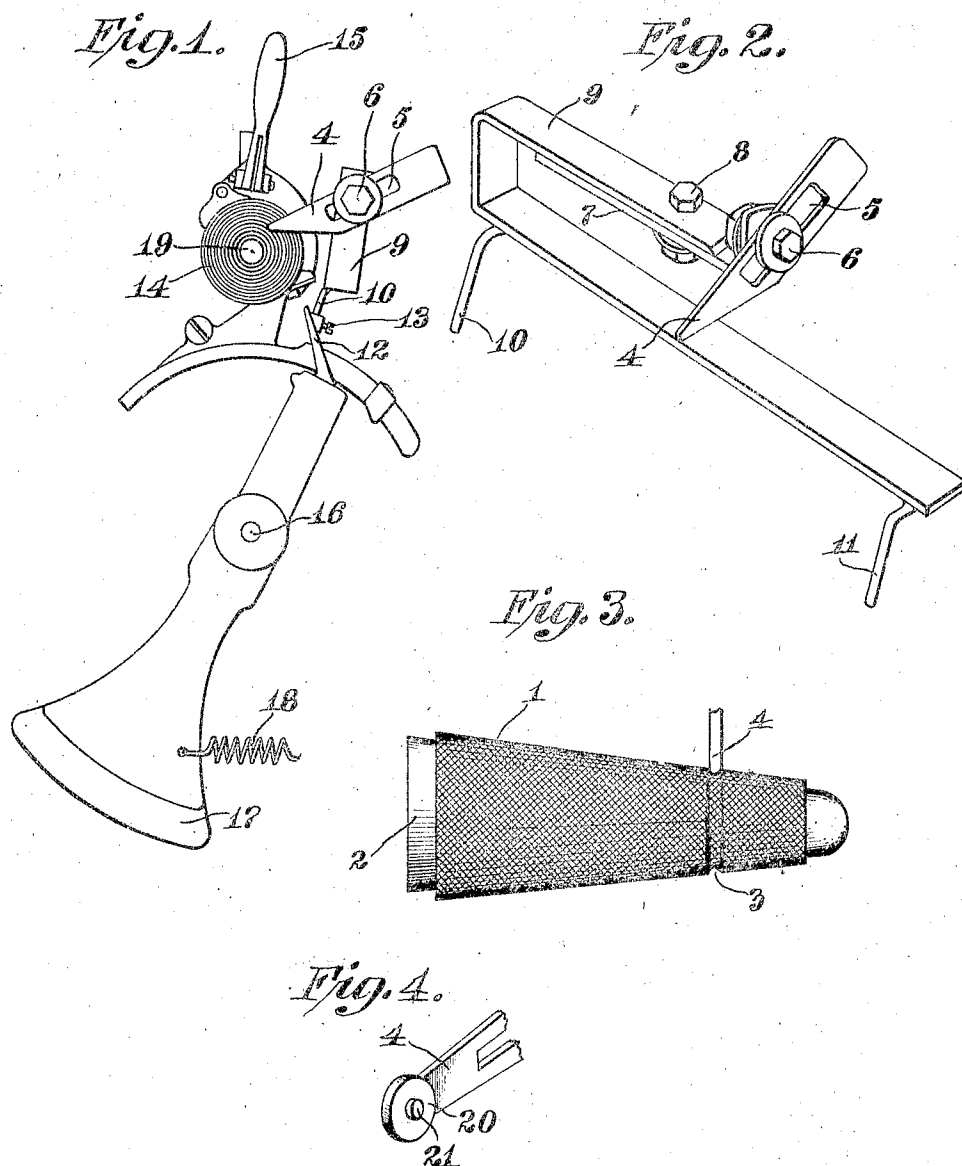
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YARN WINDING

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YARN WINDING.

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To all whom it may concern:

Be it known that I, MICHAEL MORRELL, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Yarn Winding; of which the following is a specification.

This invention relates to new and useful improvements in yarn winding.

In the process of preparing yarns for industrial uses, the yarn is wound on a core from which it must be later unwound by the machine equipped to make the ultimate product, or into suitable balls or packages. During the reeling or winding operation, the yarn often breaks and it is necessary for the operator to knot together the broken ends. In unwinding the yarn from the core it is likely to catch in these knots and tear. This danger exists particularly in the case of silk, artificial silk, or other fine and fragile yarns. In order to prevent the yarn from catching on knots, it has been the practice to wind the yarn on a cone-shaped core and to place all knots at one end of the core in such a manner that all the knots be in the top or bottom stratum of the winding. While this method reduces breakage during the unwinding, it has several drawbacks. One of the disadvantages is that it is rather tedious and therefore expensive to locate the knots in the end stratum. Further trouble arises from the fact that when, after the tying of a knot the winding operation is continued, the knot is likely to slip into a lower stratum and form an obstacle in the unreeling of the yarn.

It is the object of the present invention to overcome these drawbacks by producing a package of yarn preferably, but not necessarily, in the form of yarn wound on a cone-shaped core in which the knots may be definitely located in a level below that of yarn sections likely to catch in such knots, i. e., yarn sections located in the same or adjacent layers.

In accordance with the preferred embodiment of the invention herein disclosed, this is accomplished by producing a winding of yarn in each layer of which certain sections of the yarn are below the general level of the layer, e. g., by producing a groove intermediate the ends of the winding.

Knots placed in this groove will stay there and will be out of the path of the yarn during the unwinding operation.

In accordance with the present invention, the method by which such grooved package or spool of yarn is produced consists of bearing against the yarn during its winding. However, it will be obvious to those skilled in the art that various other methods may be adopted without departing from the spirit of the present invention.

In order more clearly to illustrate the nature of the present invention, an embodiment thereof will now be described more in detail.

Fig. 1 is a side elevation of as much of a winding machine as is necessary for a clear understanding of the winding method; Fig. 2 is a perspective view of the tool used to produce a groove in a cone of yarn and which is applicable to machines of well-known types; Fig. 3 is a side elevation of a cone of yarn provided with a groove intermediate its ends; and Fig. 4 is a perspective view of a modified form of groove forming tool point.

As shown in Fig. 3 of the drawings, yarn 1 is wound on a hollow paper cone 2; a groove 3 being produced intermediate the ends of the yarn package. If the yarn breaks during the winding operation the broken ends are knotted, the loose yarn is wound by hand on the core in such a manner that the knot be located within the groove 3. The winding operation may then continue without danger of the knot slipping out of the groove 3, as would be the case is the knot were placed on the top or bottom stratum (adjacent the apex or base of cone 2) of the yarn.

Such groove 3 may be formed in the layer of yarn on core 2 by using a pointed instrument 4 which is pressed towards the cone 2 while yarn is being wound thereon. As the yarn is passed back and forth during its winding on the cone 2, when it passes under the tool 4 it will be flattened or pressed more tightly, and in the ultimate product a depression or groove will be found at the point where the tool bore against the yarn.

In applying the tool to well-known winding machines such as the one manufactured

by the Universal Winding Company of Boston, Massachusetts, the tool 4 is made in the form of a pointer provided with a longitudinal slot 5 and mounted by means of a bolt 6 projecting through said slot on an arm 7. By means of a bolt 8 the yarn 7 is slidably mounted on one leg of a U-shaped bracket 9, the other leg of which is provided with projections 10 and 11, by means of which it may be attached to the winding machine. By means of the bolts 6 and 8 the attachment may be adjusted for various sizes of yarns and cones and degrees of tension.

As shown in Fig. 1 the attachment is fastened to a platform 12 by means of set screws like 13. The platform 12 may be reciprocated with respect to a head 14 on which a paper cone 2 may be clamped under the control of a lever 15. The platform 12 swings around a shaft 16 and is normally pressed towards the cone 2 by means of a weight 17 and suitable tensioning spring 18. The shaft 19 is rotated by a suitable motor drive (not shown) and causes the rotation of cone 2. The yarn 1 passes between the legs of the bracket 9 onto the cone at the required tension and suitable means (not shown) are provided for equally distributing the yarn to form a layer of required width on the cone.

The end of pointer 4 must, of course, not bear against the yarn so as to injure it. One way of guarding against this is by rounding the end of the pointer. Another way of protecting the yarn against injury is shown in Fig. 4 in which a roller 20 is mounted on a pin 21 provided at the end of pointer 4. This roller may be made of porcelain or glass with rounded edges and should

be freely rotatable around the pin 21. The width of the roller 20 will determine the width of groove 3.

What I claim is:

1. As a new article of manufacture, a yarn winding in which in each layer certain portions of the yarn are below the general level of the layer, the lowered portions affording a depression within which knots are placed.

2. As a new article of manufacture, a yarn winding having layers in which certain sections of the yarn are below the general level of the layer, the lowered sections affording a depression within which knots are placed.

3. As a new article of manufacture, a grooved winding of yarn with the knots located in the groove.

4. As a new article of manufacture, a cone of yarn having a groove within which the knots are confined.

5. As a new article of manufacture, a cone of yarn having a groove at right angles to its axis and intermediate its ends, the knots in the yarn being confined in the groove.

6. The method of winding yarn on a core which consists in bearing with a tool against the core during the winding of the yarn thereon to produce a groove in each layer of yarn, and placing the knots by which yarn ends are fastened together within the confines of said groove.

In testimony whereof, I have signed my name to this specification, this 4th day of September 1925.

MICHAEL MORRELL.