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TUBE FOR THE WINDING OF YARNS AND THREADS

Filed April 6, 1929

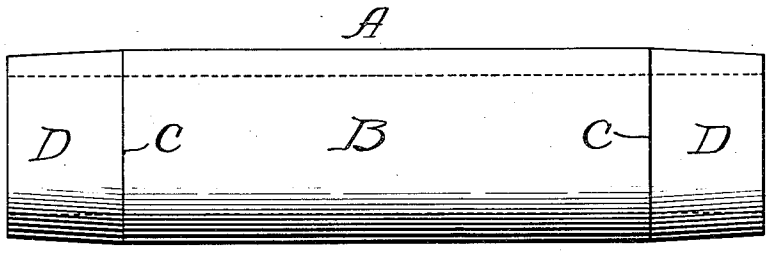
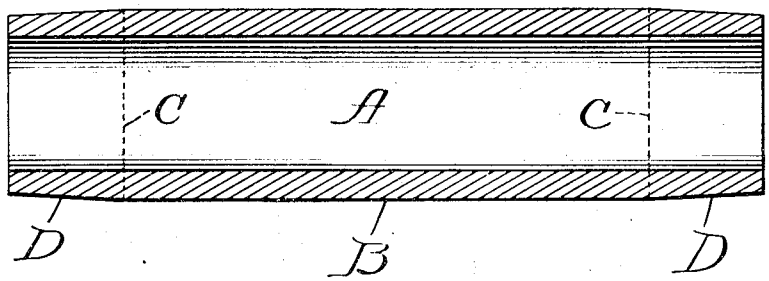


Fig. 1

Fig. 2



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UNITED STATES PATENT OFFICE

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TUBE FOR THE WINDING OF YARNS AND THREADS

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This invention relates to tubes used in the textile industry for the winding of yarns and threads.

A form of tube at present extensively employed for winding yarn to be used in the electric insulating trade, in braiding, and in a number of other trades consists of a plain hollow cylinder of compressed fiber the external surface of which is of uniform diameter from end to end.

The safety and quality of winding are contingent upon having the first layers repose firmly where they are laid on the tube. As one of the foremost winding engineers has aptly phrased it,—"The angle of lay should be the angle of repose". Lacking this, the layers at the ends of the tube will slip and draw in, thereby giving a false length of traverse and creating a condition of a loose mass of yarn, which is not conducive to good winding, nor to good delivery when the package is unwound.

With a view to preventing this undesirable condition it has heretofore been proposed to form in the outer cylindrical surface of the tube a series of spaced parallel annular grooves or depressions. But where, as is usually the case, the superposed layers are deposited on the tube in alternating oppositely directed spirals, such grooves or depressions have little or no effect to prevent the slipping and bunching of the inner layers of yarn.

It is the object of the present invention to provide a yarn winding tube that will successfully overcome the defect above noted. And to this end, my invention, broadly defined, resides in a cylindrical tube having the end portions of its outer cylindrical surface tapered inwardly at a small angle toward the ends of the tube.

My present improvement is typically illustrated in the accompanying drawing, in which—

Fig. 1 is a side elevation;

Fig. 2 is an axial section;

Referring to the drawing, A designates as an entirety my improved winding tube which, in practice, is usually made of compressed fiber of sufficient thickness to maintain its form under all conditions of service. The major intermediate portion B of this tube, lying, in the instance shown, between the transverse lines C, has its external surface cylindrical, as shown. The end portions D of the external surface of the tube, lying between the lines C and the ends of the tube, are continuous with the intermediate surface B and are tapered inwardly toward the ends of the tube at a slight angle. Preferably and as shown the tapered end surfaces D are of equal lengths and form equal angles with the intermediate cylindrical surface B.

The end portions of the layers of yarn are, of course, wound on the tapered end surfaces D of the tube. The tendency of the end portions of the layers to creep inwardly and become bunched is effectively resisted, partly by the tapered surfaces which, it will be observed, expand or increase in diameter in the direction of the slipping tendency, and partly by the low ridges or humps formed at the merger of the intermediate and end winding surfaces, represented by the lines C. A layer of yarn will not slip as readily over a humped surface as over a uniform cylidrical or conical surface.

From the foregoing it will be apparent how my improved tube overcomes the inherent weakness of the tubes heretofore known and used for like purposes and gives the yarn a much better grip on the tube, so that a firmer, larger and consequently better package can be built.

I claim—

1. A winding tube, comprising an intermediate body portion having a cylindrical external surface and end portions the external surfaces of which are tapered inwardly toward the ends of the tube.

2. A winding tube, comprising an intermediate body portion having a cylindrical external surface and end portions the external surfaces of which are continuous with said cylindrical surface and taper inwardly toward the ends of the tube and form equal angles with said cylindrical surface.

3. A winding tube comprising an intermediate body portion having a cylindrical external surface and end portions the external surfaces of which are continuous with said cylindrical surface and taper inwardly toward the ends of the tube, the external surfaces of said end portions being of equal lengths and forming equal angles with said cylindrical surface.

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