No. 786,698. PATENTED APR. 4, 1905.

S. W. WARDWELL.

COP TUBE.

APPLICATION FILED JAN. 14, 1904.

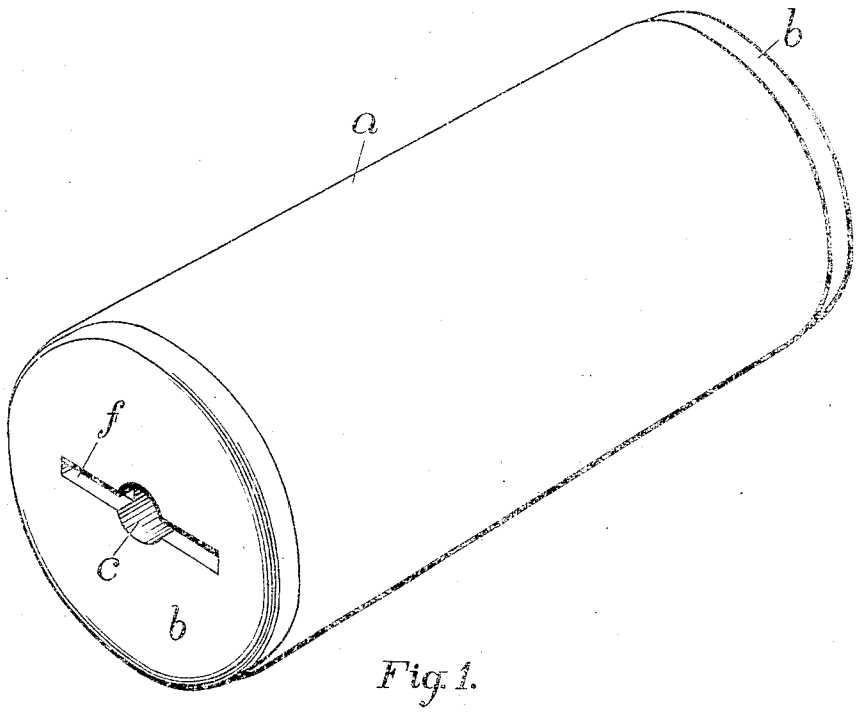


Fig. 1.

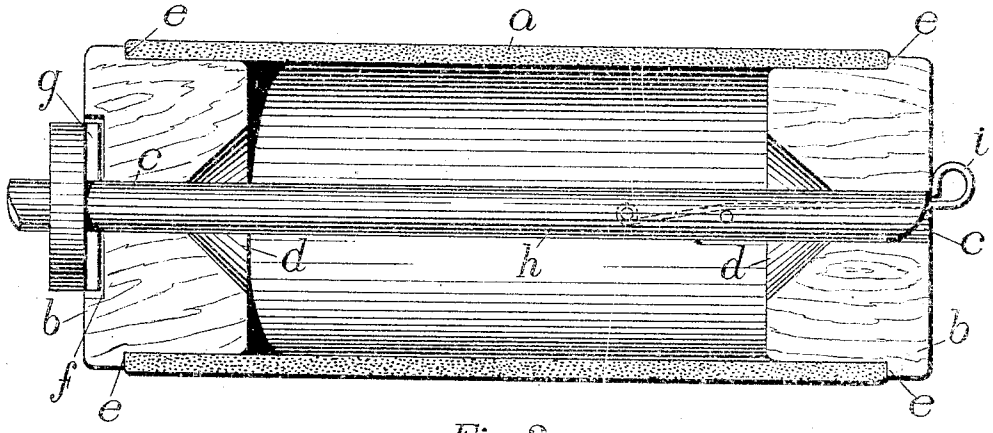


Fig. 2.

WITNESSES

J. M. Freeman.

J. J. Mc Cauley.

INVENTOR

Simon W. Wardwell

BY

Foster Freeman Watson Coleman

ATTORNEYS

No. 786,698. Patented April 4, 1905.

UNITED STATES PATENT OFFICE.

SIMON W. WARDWELL, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO UNIVERSAL WINDING COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

COP-TUBE.

SPECIFICATION forming part of Letters Patent No. 786,698, dated April 4, 1905.

Application filed January 14, 1904. Serial No. 189,022.

To all whom it may concern:

Be it known that I, SIMON W. WARDWELL, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented new and useful Improvements in Cop-Tubes, of which the following is a specification.

My invention relates to improvements in cop-tubes, or tubes for supporting yarn packages, especially in cases where the yarn must be subsequently removed from the tube by unrolling.

My improved cop-tube is particularly intended for use in warp-creels.

Figure 1 is a perspective view of the cop-tube; Fig. 2, a sectional view showing, in addition to the structure, the manner in which the cop-tube is secured to the winding-machine spindle.

My invention consists in building the tube of a light shell *a*, of paper, fiber, or other suitable material, with protecting end pieces *b b*, each of which projects within the shell and is formed with an axial bore *c* and a cupped or concave inner end *d*. The end pieces *b* may be of wood or any firm material and are directly and securely fastened to the shell by cementing or other suitable means. Both end pieces are formed with shoulders *e e*, which abut and protect the ends of the fiber shell, and a mutual protection is afforded the end pieces by providing for the shell to project slightly beyond their peripheries. One of the end pieces is preferably formed with a transverse recess *f* across the axial bore *c*, or both pieces may be so formed.

When a yarn package is wound, the tube is secured to the winding-spindle in the manner indicated in Fig. 2. The dog or driver *g* (a part of the winding-spindle *h*) engages the recess *f*. This engagement is maintained by the spring-catch *i*, which prevents longitudinal displacement of the cop-tube on the spindle. The cupped or concave inner ends *d* of the end pieces *b b* are to facilitate mounting the cop-tube on both the winding-spindle and the creel-spindle. Acting as a funnel, they guide the end of the spindle to the axial bore *c*.

Other forms of built-up tubes and spools have been attempted, but none so simple and effective as that herein described. The manner of securing the ends has been less protective, and therefore the cop-tube has been more liable to damage and destruction.

In my improved cop-tube the ends of the shell *a* are protected by the end pieces *b b*, preventing the disintegration of the laminary structure of this part of the tube, and, further, the shell in turn protects the end pieces from damage or destruction. Through its projection beyond the periphery of the end pieces the shell provides a sort of surrounding cushion or buffer, so that when the tubes are thrown about, as is the practice among operatives who use them, the ends are saved from being dented or broken.

For warping purposes it is desirable that the cop-tube be of relatively large diameter in order to maintain the tension of delivery as even as possible. Therefore a cop-tube of such composite structure as described is of great advantage. Large numbers of these tubes are handled daily in the mills, and it is obvious that when light they can be handled much more easily and expeditiously than if solid and massive. Further, the heavier solid spools and tubes are more susceptible to damage, for when thrown about in handling they become chipped and scarred and in use injure the yarn. Initially expensive their rapid deterioration results in great cost of maintenance.

As above indicated, my improved cop-tube is light, and therefore less liable to damage, and, further, is particularly designed to meet the destructive conditions to which such cop-tubes are subjected.

I claim as my invention—

1. In a flangeless cop-tube, the combination with two end pieces *b b* having shoulders *e e*, axial bores *c c*, cupped inner ends *d d* and one of the end pieces formed with a transverse recess *f*, of a fiber shell *a* arranged with its ends abutting the shoulders *e e* and its periphery projecting slightly above the peripheries of the end pieces to protect the latter from damage.

2. In a cylindrical cop-tube, the combina-

tion with a fiber shell *a*, of end pieces *b b* arranged with portions cemented within the shell, said end pieces formed with shoulders *e e* abutting the ends of the shell and having axial bores *c c*, the diameter of the portions of the end pieces projecting outside the shell being slightly less than the outside diameter of the shell.

3. In a cop-tube, the combination with a fiber shell *a*, of end pieces *b b* arranged to support and protect the shell and said shell projecting beyond the peripheries of the end pieces to protect the latter, shoulders *e e*, abutting the ends of the shell and extensions of the end pieces within the shell.

4. In a cop-tube, the combination of a fiber shell *a*, arranged to surround suitable end pieces *b b*, and projecting above the peripheries of the latter, said end pieces formed with shoulders *e e* abutting the ends of the shell, and having axial bores *c c*, substantially as described.

5. A cop-tube having end pieces, and a shell of fiber partially inclosing and projecting radially beyond the exposed periphery of the end pieces and secured thereto, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SIMON W. WARDWELL.

Witnesses:

ARTHUR A. ARMINGTON,

CHARLES A. EDDY.