M. LEITCH.

SPOOL.

APPLICATION FILED DEC. 5, 1908.

976,382.

Patented Nov. 22, 1910.

2 SHEETS—SHEET 1.

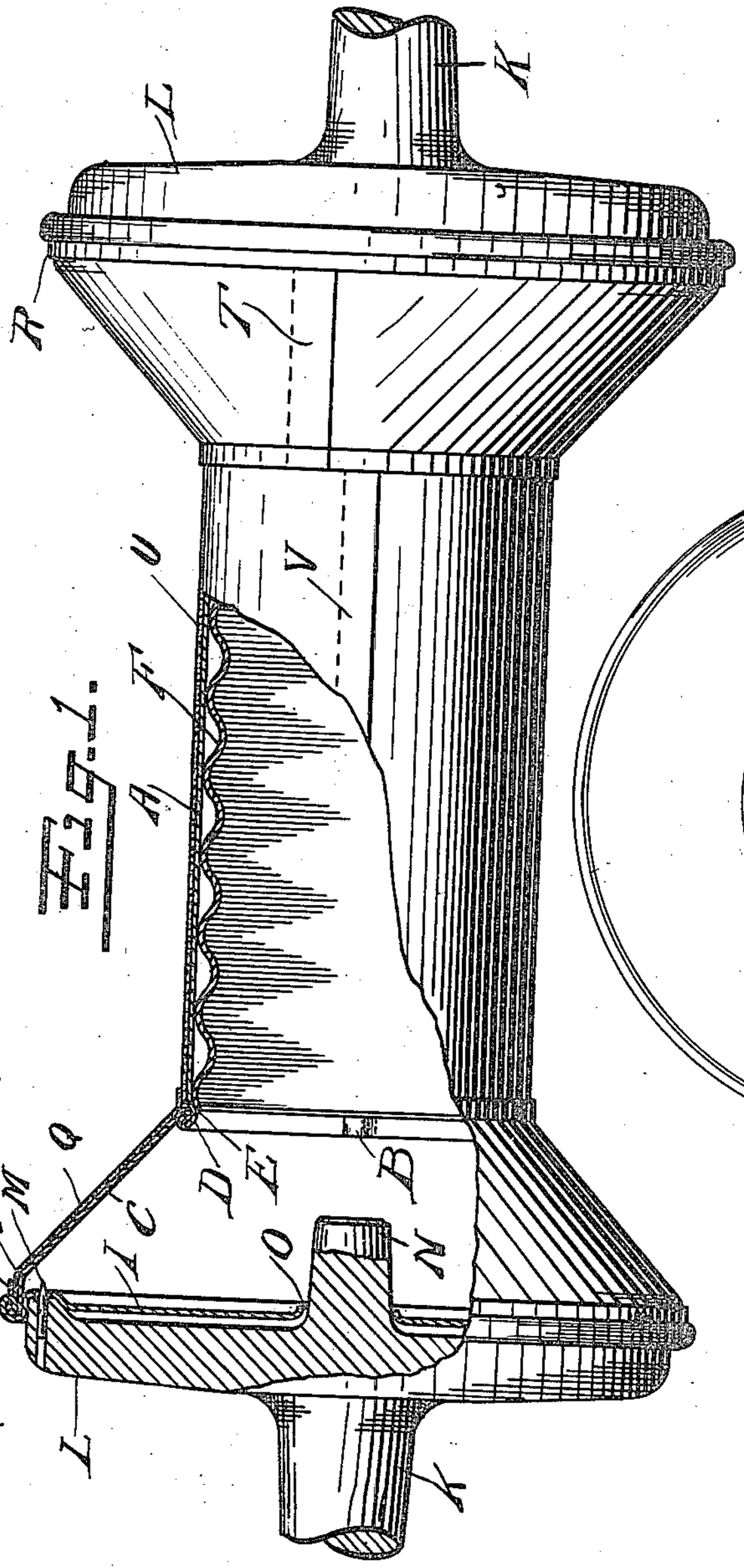


FIG. 1.

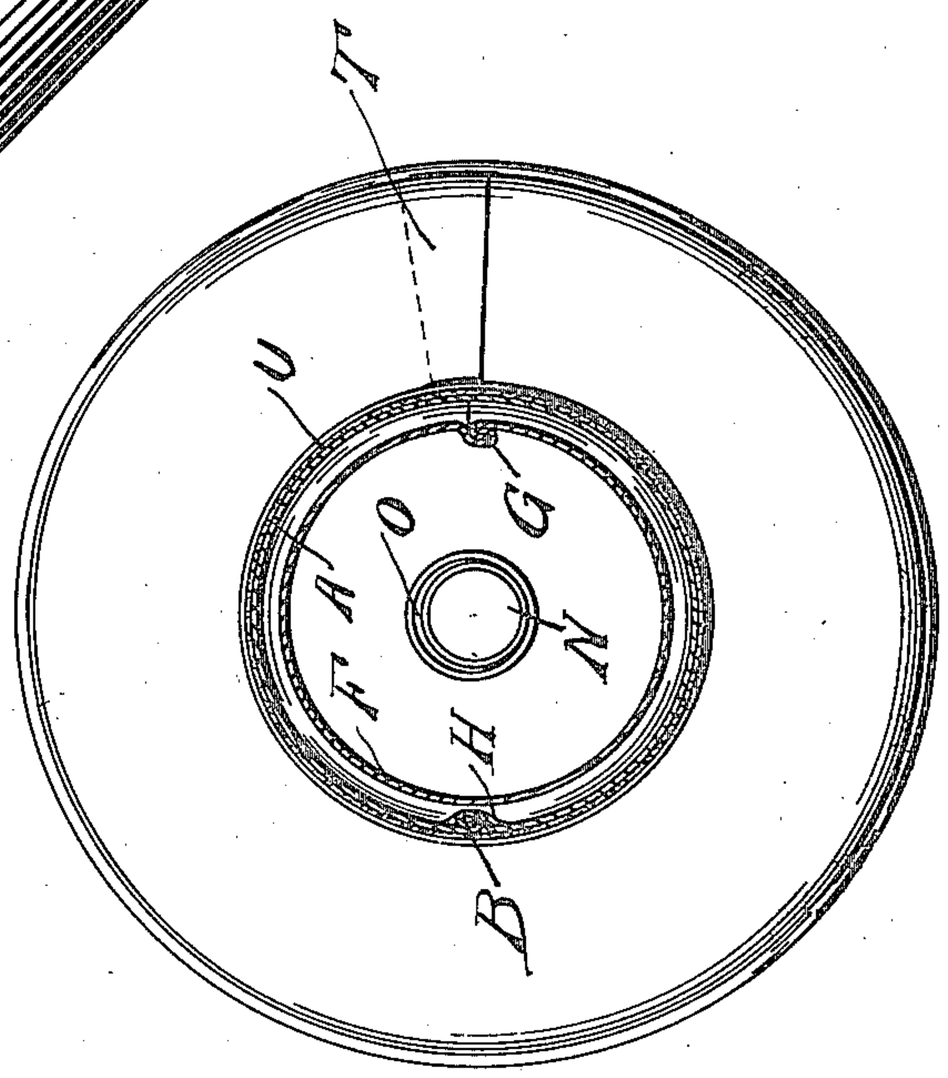


FIG. 2.

Witnesses:
Chas. A. Leard.
Fred'k. H. Dannenfelser.

Inventor
Meredith Leitch
By his Attorneys
Bartlett, Brownell & Mitchell.

M. LEITCH.

SPOOL.

APPLICATION FILED DEC. 5, 1908.

976,382.

Patented Nov. 22, 1910.

2 SHEETS—SHEET 2.

Fig. 3.

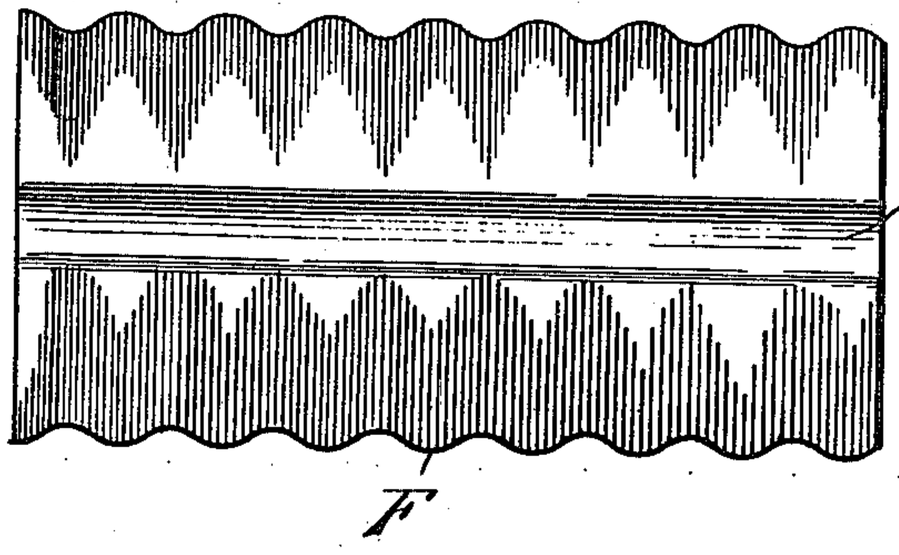


Fig. 4.

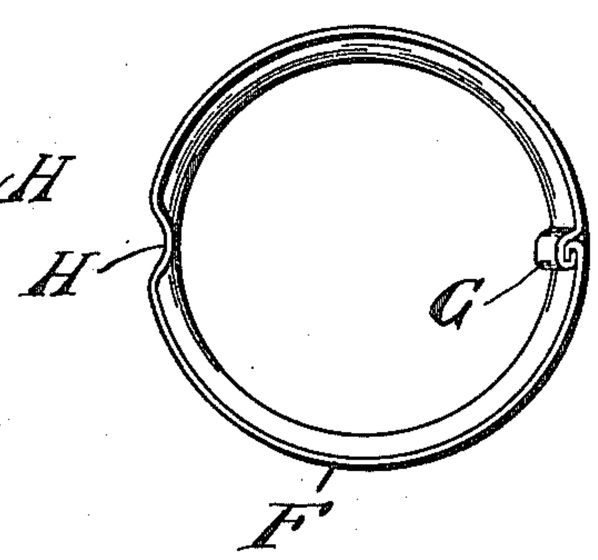


Fig. 5.

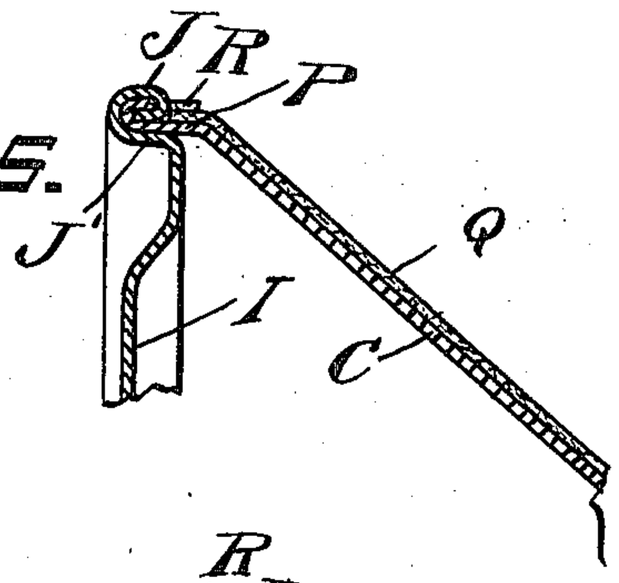


Fig. 6.

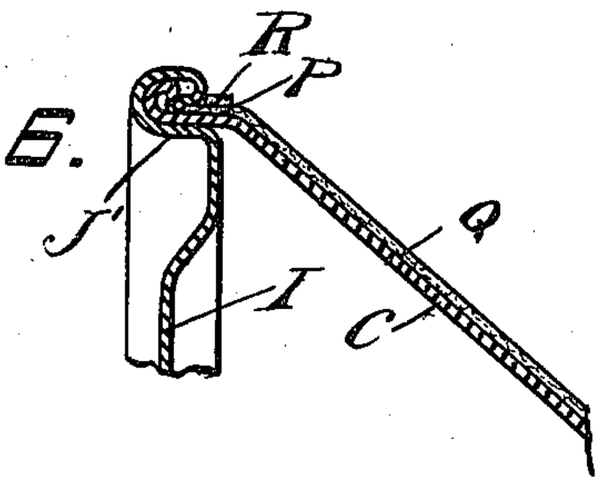
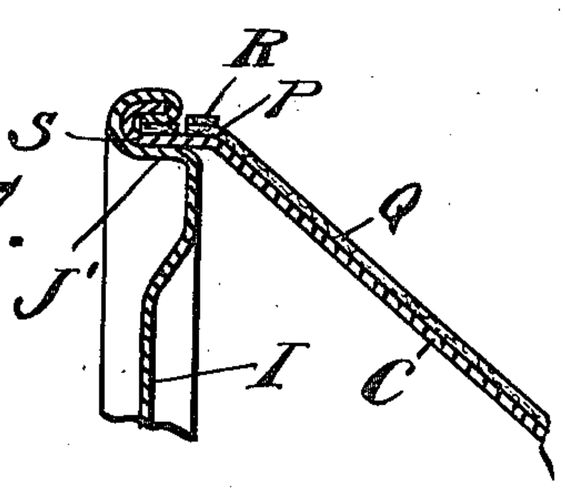


Fig. 7.



Witnesses:

Chas. A. Pard

Fred W. Dannenfelser

Inventor

Meredith Leitch

By his Attorneys

Bartlett, Brownell & Mitchell

UNITED STATES PATENT OFFICE.

MEREDITH LEITCH, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO THE AMERICAN THREAD COMPANY, A CORPORATION OF NEW JERSEY.

SPOOL.

976,382. Specification of Letters Patent. Patented Nov. 22, 1910.

Application filed December 5, 1908. Serial No. 466,056.

To all whom it may concern:

Be it known that I, MEREDITH LEITCH, a citizen of the United States, residing at Springfield, county of Hampden, State of Massachusetts, have invented certain new and useful Improvements in Spools, of which the following is a full, clear, and exact description.

My invention relates to spools, and has for its object to provide surfaces for securing the rotation of the spools about their true axes in winding, to permit the use of a lighter stock in the making of metallic spools and to provide for covering or recovering the metallic bases of the spools.

I have shown and described a sheet metal spool in my application, Serial No. 460,431, filed October 31, 1908, and have set out in that application various valuable features possessed by the construction therein disclosed.

By my present invention the body of the spool described in my prior application even when made of light metal can be made to stand the crushing strain to which it is subjected in winding, which strain, when the spool is full of thread, is very great; and when the heads of the spool are made of light metal, spindles can be used such that there will be no longitudinal movement due to the yielding of the thin metal heads, such as would be the case where ordinary spindles are used. Moreover, spindles can be used whereby the danger of having the spindles ream or tear the holes so that there is no longer a fixed engagement between the spool and spindle is eliminated, and there is no danger of having the hole become larger than the spindle so that the spool is not properly centered thereon. Moreover, the trouble, when the center of the hole is not in line with the axis of the spool body, which with the ordinary spindle, even if the hole did not tear out, would make the axis of the spool out of line with the axis of the spindle, can be eliminated.

Another advantage of my present invention is that it permits the metallic bases of the spool to be easily covered and recovered. The use of lighter metal reduces the cost of manufacture, and the accurate centering on the spindle makes the winding more accurate, while the ease in covering makes the spool more easy to manufacture and permits the repeated use of the metallic base.

The following is a description of my invention, reference being had to the accompanying drawings, in which,

Figure 1 is a longitudinal view of the spool and driving parts, partly in section. Fig. 2 is a transverse section of the spool taken at the center of Fig. 1. Fig. 3 is a side elevation of the reinforcing lining for the body of the spool. Fig. 4 is an end elevation of said lining. Fig. 5 is an enlarged sectional view of a detail showing the method of fastening the paper cover to the metallic base, and Figs. 6 and 7 are enlarged sectional details of modifications of the construction shown in Fig. 5.

Referring more particularly to the drawings, A is the metallic cylindrical portion of the spool, the same being formed from a sheet of metal whose edges are secured together by a longitudinal seam B. This metallic portion is secured to tapering metallic head portions C by joints D formed at each end. At the joint D, I reduce the end of the portion A as at E and by these reduced portions I hold a lining F, preferably corrugated circumferentially, as shown, and bearing against the cylindrical body A so as to reinforce the same against any lateral strain due to the thread which may be wound thereon. This reinforcing cylinder F is preferably formed from a sheet of metal whose ends are secured together by a longitudinal seam G, which in the spool is displaced relatively to the seam B of the body portion.

In order that the seam B may be formed on the inside of the body portion A, the reinforcing lining is provided with a groove or indentation H which passes over the seam B when the corrugated reinforcing lining is inserted in the body portion A. With this arrangement the lining is held rigidly against longitudinal movement and renders the body of the spool sufficiently strong to withstand great pressure even though light materials are used for both body and lining.

To the tapering portions C end pieces I are secured by joints J. These joints are formed by the well known seaming machines used in the manufacture of tin cans and the like, and inasmuch as in the process of manufacture, the body portion A is cylindrical and the portions C are concentric therewith, the seams J have both their internal and their external surfaces accurately concentric

with the axis of the body portion A. I take advantage of this accurately concentric relation for securing the revolution of the spool about its true axis by providing driving spindles K having extended driving heads L concentric with the axes of the spindles and of such a size as to accurately engage the inner surfaces J′ of the joints J, as shown in Fig. 1. This inner surface is the side wall of a recess in each end of the spool and, being, as before explained, concentric with the axis of the body of the spool, enables me by the spindles referred to to mount the spool accurately so that the axes of the spool and spindle will coincide and the spool will be rotated about its true axis. The engagement of the enlarged spindles with the spool near the peripheries of the heads furnishes a large driving surface such that frictional engagement alone is sufficient under many conditions to drive the spool. If desired, prickers M may be used, which will penetrate the metal of the ends and provide a still stronger driving engagement between the spindles and the spools. The spindles may also be provided with projections N for entering the holes O in the spool ends, if such holes are provided. The projections, however, should be smaller than the holes, since, as above described, there is a liability that the holes will not be properly centered.

In addition to securing an accurate driving surface always concentric with the axis of the spool, the engagement of the spindle head with the spool at its periphery prevents any longitudinal movement of the spool in winding. On account of the flexibility of a thin head, the spool, when supported by engagement at or near the center only, is liable to have a limited longitudinal vibration or movement while being wound, which interferes with the true lay of the thread. When, however, the support is near the periphery, as shown in Fig. 1, the supporting engagement is with the parts which are substantially rigid and have no longitudinal movement, and therefore, the difficulty referred to is eliminated.

In order to permit the sheet metal bases to be covered with fibrous material such as paper or similar material after the bases are formed, I provide the heads with cylindrical portions P adjacent to the seam J and secure the paper covering Q to the ends so that it laps over on to these cylindrical portions P. I then apply a small strip or tape R of paper or the like provided with a suitable adhesive so that it adheres to the edge of the paper cover, which lies upon the cylindrical portions, in this way securing it in position and preventing the paper from expanding so as to show a raw or rough edge. The strip provides a finish to the edge of the paper as well as restraining it in position. This is shown in enlarged cross-section in Fig. 5. Fig. 6 shows a somewhat similar construction except that the head has a recess formed beneath it under which the edge of paper covering can extend. The edge can be forced within the recess and will be kept from rising by the overhang. If desired a restraining strip may be applied in the same manner as in Fig. 5, although such strip is not always necessary.

Fig. 7 shows a spool in which the paper originally extended beneath the seam so as to be clamped down and held thereby. Upon becoming soiled it is cut by a sharp instrument along the right hand edge of the seam, leaving a portion S secured therein. A new covering is then applied to the tapered portion of the spool extending on to the cylindrical portion, and a securing tape R applied to the edge thereof. In each case a cylindrical portion P is formed adjacent to the seam J and the covering is extended over the cylindrical portion P and secured thereto by a securing tape. The covering Q is formed from a sheet cut in the proper shape, the ends being lapped as at T.

The body of the spool is covered by a strip of paper U secured thereto with a lapped joint V and the end portions Q are extended so as to be over the covering of the body portion.

What I claim is:

1. A spool having a metallic body portion with enlarged heads secured thereto, said body portion having a circumferentially corrugated reinforcing lining, the body portion being formed with a longitudinal locking seam.

2. A spool having a metallic body portion with enlarged heads secured thereto, said body portion having a circumferentially corrugated reinforcing lining, said body portion being formed with a longitudinal locking seam, and said lining having a longitudinal seam displaced relatively to the seam in said body portion.

3. In a spool, the combination of a metallic base consisting of a cylindrical portion and tapered enlarged heads secured thereto, fibrous coverings for the tapered surfaces of the enlarged heads and an adhering binding strip securing the edges of the coverings on said tapered portions at the peripheries of said heads, said heads having lateral projections extending beyond said strips and adjacent thereto.

4. In a spool, the combination of a base having a cylindrical metallic body portion and tapered end portions provided with heads at their peripheries and substantially cylindrical parallel portions adjacent to said heads with fibrous coverings for said end portions, and an adhering binding strip securing the edges of the paper covering said end portions at the parallel cylindrical por-

tions of said end portions, said heads having lateral projections extending beyond said strips and adjacent thereto.

5. In a spool, the combination of a spool body having a cylindrical portion and cone-shaped heads, said cone-shaped heads having circumferential recesses in their peripheries extending in a direction parallel to the axis of the spool, the recesses in one head opening toward the recesses in the other head, and a fibrous covering for said heads extending into said recesses, the recesses being such that the edges of the fibrous covering can be forced within them.

6. In a spool, the combination of a spool body having a cylindrical portion and cone-shaped heads, said cone-shaped heads having circumferential recesses near their peripheries extending in a direction parallel to the axis of the spool, the recesses in one head opening toward the recesses in the other head, a fibrous covering for said heads extending into said recesses, the recesses being such that the edges of the fibrous covering can be forced within them, and adhering strips applied to said covering in proximity to said recesses.

7. In a spool, the combination of a cylindrical metallic body portion having parts near its end reduced in diameter, a lining therefor held within said body portion by the reduced parts, and end portions secured to said body portion by seams formed at said reduced parts.

MEREDITH LEITCH.

Witnesses:
FREDERICK K. FEARNSIDE,
JOHN J. DONELAN.