Nov. 1, 1932. C. K. DUNLAP 1,885,693

SPOOL

Filed Dec. 15, 1930

FIG. 1.

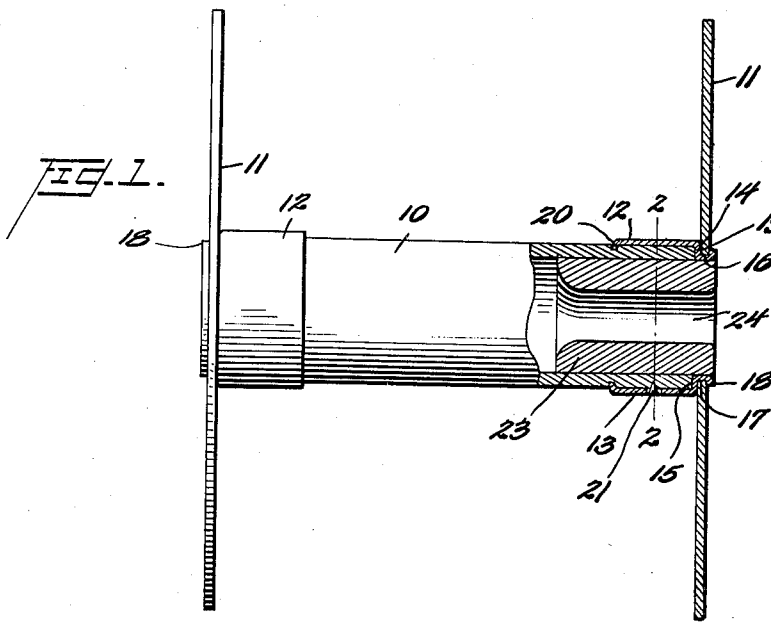


FIG. 2.

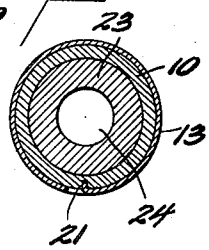


FIG. 3.

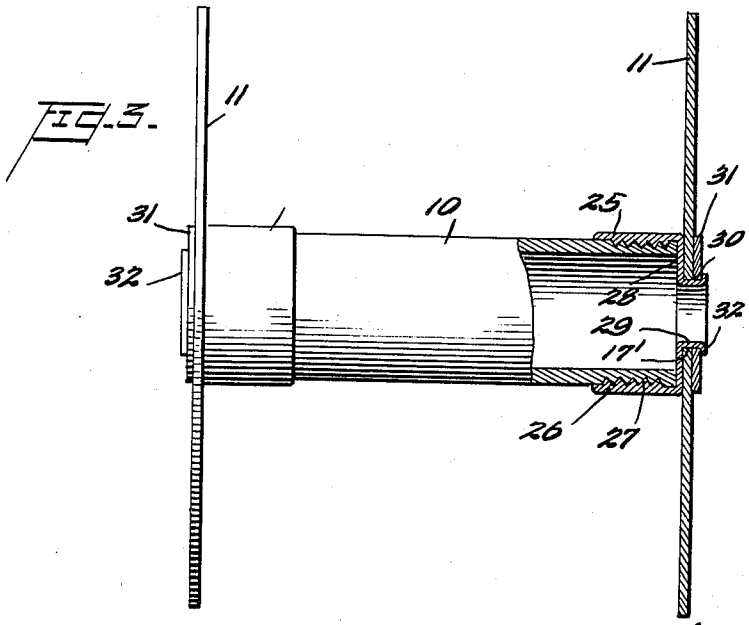
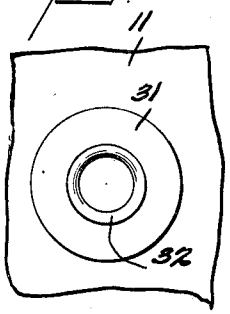


FIG. 4.



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Patented Nov. 1, 1932 1,885,693

UNITED STATES PATENT OFFICE

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SPOOL

Application filed December 15, 1930. Serial No. 502,517.

This invention relates to spools, reels, bobbins, or like winding devices, and more particularly to means for securing the end discs or flange members to the barrels or body portions thereof.

The general object of this invention is to provide an improved spool for thread, wire, or the like, in which the end discs or flange members are rigidly fastened to the body member by means of novel securing elements, the particular construction of which also forms an important feature of the invention.

The present invention contemplates the provision of a practical and simply constructed securing element, a portion of which is adapted to receive and enclose an end of the barrel or body member of the spool or bobbin, and which is further provided with means for retaining the end discs.

Other objects and features of novelty will be apparent from the following specification when read in connection with the accompanying drawing in which certain embodiments of the invention are illustrated by way of example.

In the drawing:

Figure 1 is a view in side elevation of one embodiment of my invention, a portion thereof being shown in vertical cross-section;

Figure 2 is a transverse, vertical, sectional view taken on line 2—2 of Figure 1;

Figure 3 is a view similar to Figure 1 showing another embodiment of the invention; and

Figure 4 is a fragmentary end view of the spool illustrated in Figure 3.

In all of the exemplary embodiments of my invention illustrated in the drawing, the body members or barrels of the spools are designated by the numeral 10, and the end discs or flange members by the numeral 11. As illustrated, the body members 10 comprise tubular cylinders constructed preferably of pasteboard or a similar material, but it will be understood that in all forms of the invention, except those in which a bushing or plug is inserted in the end of the body members, there may be employed solid body members constructed of the same material, or wood, or the like.

The fastening means employed in the spool or winding device illustrated in Figures 1 and 2 will now be described. This means comprises an annular fastening element designated generally by the numeral 12. The major portion of element 12 comprises the cylindrical portion 13 within which the end of the body member 10 is adapted to snugly fit. At the outer end of the cylindrical portion 13 there is formed an annular shouldered portion 14 against the interior surface 15 of which the end of the body portion 10 is adapted to abut. From the inner rim of the annular portion 14, a narrowed, cylindrical portion 16 is adapted to extend through the central aperture 17 provided in the end disc 11. After the end disc 11 is applied to the cylindrical or tubular portion 16 of the fastening element, the outer edges of this portion are spun or flared radially outwardly as at 18 in order to overlap and firmly clamp the margins of the aperture 17 between the flared flange 18 and the outer surface 19 of the shouldered portion 14.

As a means for more rigidly securing the fastening element 12 to the barrel or body portion 10 of the spool, the inner edge of the cylindrical portion 13 is crimped radially inwardly as at 20 so as to be embedded slightly in the material of the body member 10. The rounding or beveling of this inner edge of the fastening element 12 also provides a smoother junction between the winding surfaces of the fastening element and the barrel or body member. As a further means for more rigidly securing the fastening element to the body member, a spur or prong 21 may be struck inwardly from the material of the cylindrical portion 13 of the securing element so as to be embedded in the body member.

If desired, the body member of the spool and the end disc connection may be reinforced by the insertion of a plug or bushing 23 which is adapted to fit tightly within the narrowed portion 16 of the securing element 12 and within the end of the tubular body

member 10. In constructions in which this bushing is employed, it is advisable to make the internal diameters of the body member 10 and of the narrow tubular portion 16 the same. In other cases, the diameter of the portion 16 may be made of any suitable dimension. The bushing 23 is preferably provided with a central bore 24 for the reception of a shaft or axle for the spool. In cases in which the bushing 23 is not employed, the internal diameter of the portion 16 may be predetermined with regard to the diameter of the shaft or axle to be used, just as in the case of the embodiment illustrated in Figure 3 which will presently be described.

The end disc securing element 25 illustrated in Figures 3 and 4 is provided with a cylindrical portion 26 which is internally threaded as shown at 27. In applying the element 25 to the end of the body member 10, the latter may be either previously formed with screw threads corresponding to the threads 27, or the body member 10, if constructed of relatively deformable material, may be rotatably forced within the cylindrical portion 26 and the necessary threads may be cut or pressed therein by the threaded portion 27 of the connecting means. The fastening element 25 is formed with a shoulder 28 against the interior surface of which the end of the body portion 10 is adapted to abut and which is extended outwardly as at 29 to form a narrowed tubular or cylindrical portion similar to that shown at 16 in the embodiment illustrated in Figure 1. The smaller tubular portion 29 is adapted to be inserted within the aperture 17′ of the end disc and also through the central registering perforation 30 of a washer 31 which is adapted to overlie the central marginal portion of the end disc 11. The outer end 32 of the portion 29 is adapted to be spun or flared radially outwardly as in the case of the previously described embodiment so as to retain the washer 31 and cause it to rigidly clamp the end disc against the outer surface of the shouldered portion 28.

It will be understood that the threaded connecting element 25 may be formed with an end disc retaining portion similar to the embodiment illustrated in Figure 1 instead of employing the washer 31 as in the case just described; and also that the disc retaining construction which includes a washer may be employed in connection with the cylindrical portion 13 illustrated in Figures 1 and 2.

The various securing elements, end discs, and body portions may be constructed of any suitable material, but in their preferred forms the body members or barrels 10 are constructed of pasteboard or wood, the end discs 11 of impregnated pasteboard, and the securing elements 12 and 25 of a ductile metal, such as brass or the like.

It will also be understood that various changes and modifications may be made in the embodiments illustrated and described within the scope of the invention as defined by the following claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a bobbin, spool, or the like, comprising a barrel or body member and a centrally apertured end disc, a fastening element for securing said end disc to said body member comprising a cylindrical portion receiving and enclosing an end of said body member, provided with a portion having an internal shoulder against which said end abuts, a washer disposed against the outer surface of said end disc and having a perforation registering with the aperture of said end disc, a narrowed cylindrical portion extending outwardly from said shouldered portion and through said aperture and said perforation, and an annular flange flared radially outwardly from said narrowed cylindrical portion and spun over the margin of the perforation in the washer whereby the washer is caused to clamp the end disc tightly against the shouldered cylindrical portion of said fastening element.

2. In a bobbin, spool, or the like, comprising a barrel or a body member and an end disc, a fastening element for securing said end disc to said body member comprising a cylindrical portion receiving and enclosing an end of said body member, an outer portion adapted to receive the end disc, the inner edge of said cylindrical portion being crimped radially into the material of the body member, whereby longitudinal movement of said element is prevented, and a prong or spur struck from the material of said cylindrical portion into the material of said body member, so as to prevent both longitudinal and rotative movement of said element relatively to the body member.

3. In a bobbin, spool, or the like, comprising a tubular barrel or body member and a centrally apertured end disc, a fastening element for securing said end disc to said body member comprising a cylindrical portion receiving and enclosing an end of said body member, the inner edge of said cylindrical portion being crimped radially into the material of the body member, said cylindrical portion being provided at its outer end with a shoulder of a width substantially equal to the thickness of the tubular body member against the interior of which an end of said body member abuts, a narrowed cylindrical portion of an internal diameter substantially equal to that of said body member extending from said shouldered portion and through the aperture in said end disc and having its outer peripheral edges spun radially outwardly over the margin of the end disc aperture whereby the end disc is clamped tightly

against the exterior of said shouldered portion of the fastening element.

4. The combination set forth in claim 3 in which a plug is wedgingly inserted within the narrowed cylindrical portion of the fastening element and the end of the tubular body member.

5. In a bobbin, spool, or the like, comprising a barrel or body member and a centrally apertured end disc, a fastening element for securing said end disc to said body member comprising a cylindrical portion which is internally threaded for the reception of an end of said body member and provided with a portion having an internal shoulder against which said end abuts, a washer disposed against the outer surface of said end disc and having a perforation registering with the aperture of said end disc, a narrowed cylindrical portion extending outwardly from said shouldered portion and through said aperture and said perforation, and an annular flange flared radially outwardly from said narrowed cylindrical portion and spun over the margin of the perforation in the washer whereby the washer is caused to clamp the end disc tightly against the shouldered cylindrical portion of said fastening element.

6. In a bobbin, spool, or the like comprising a tubular barrel or body member and a centrally apertured end disc, a hollow annular fastening element for securing said end disc to said body member comprising a cylindrical portion receiving and enclosing an end of said body member and provided with an internal annular shoulder against which said end abuts, a narrowed hollow cylindrical portion extending outwardly from said shouldered portion, and an annular integral flange spun radially outwardly from said narrowed hollow cylindrical portion and overlapping the margin of the aperture in the end disc to retain said end disc.

7. In a bobbin, spool, or the like comprising a tubular barrel or body member and a centrally apertured end disc, a hollow annular fastening element for securing said end disc to said body member comprising a cylindrical portion receiving and enclosing an end of said body member and provided with an internal annular shoulder against which said end abuts, a narrowed hollow cylindrical portion extending outwardly from said shouldered portion, an annular integral flange spun radially outwardly from said narrowed hollow cylindrical portion and overlapping the margin of the aperture in the end disc to retain said end disc, and a prong or spur struck from the material of said cylindrical portion into the material of said body member.

In testimony whereof I hereunto affix my signature.

CHARLES K. DUNLAP.