

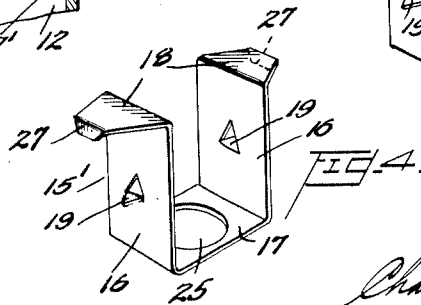
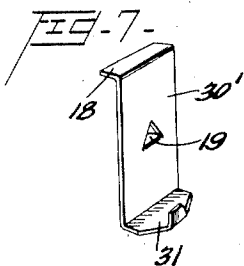
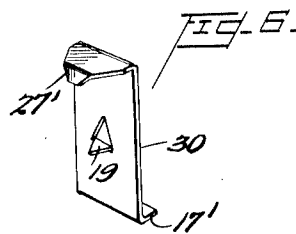
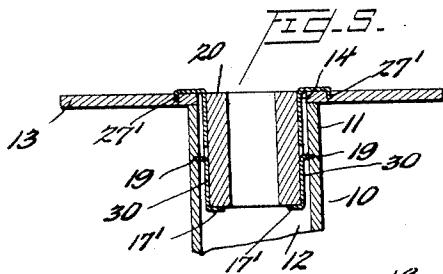
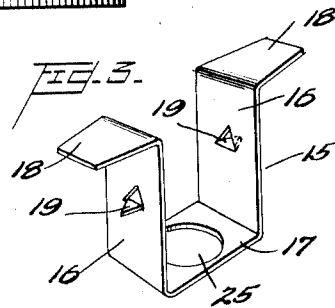
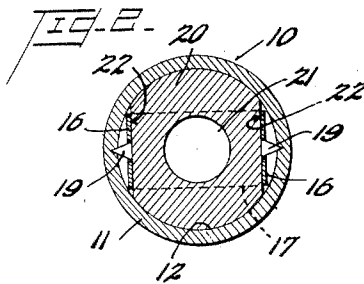
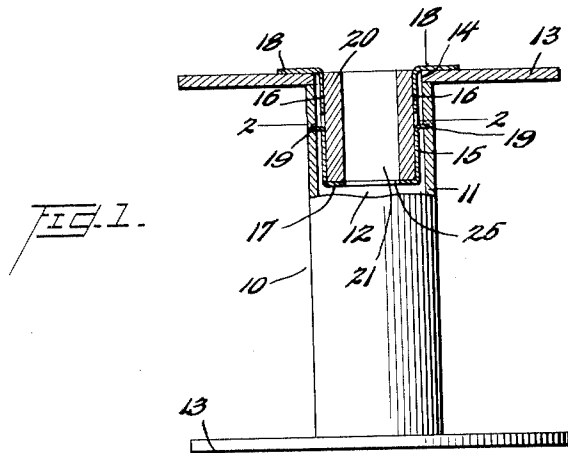
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WINDING DEVICE

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34

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WINDING DEVICE

Application filed November 7, 1930. Serial No. 494,112.

This invention relates to spools, reels, bobbins, or like winding devices, and more particularly to means for securing end discs or flange members to the body portions or barrels 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 type of securing element which is practical and simple in construction and which permits the economical manufacture of spools or winding devices of the type described, exceedingly large numbers of which are employed in the textile, electrical and other industries.

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

In the drawings,

Figure 1 is a view in elevation of a spool embodying the principles of the invention; a portion of said spool being shown in vertical cross-section to illustrate the end disc securing means employed;

Figure 2 is a horizontal cross-sectional view taken on line 2—2 of Figure 1;

Figure 3 is a view in perspective of one form of securing element;

Figure 4 illustrates a modified form of the securing element shown in Figure 3;

Figure 5 is a vertical sectional view of one end of a spool in which a further modification of the novel securing means is employed;

Figure 6 is a perspective view of one of the pair of securing elements illustrated in Figure 5; and

Figure 7 is a similar view of a further modification of the securing element.

The spool or similar winding device embodying the principles of the invention as illustrated for example in Figures 1, 2 and

5, is designated generally by the numeral 10 and comprises a core or body member 11 which may be tubular throughout its length or may be solid and provided with openings or recesses in the ends thereof. The opening or bore is designated by the numeral 12. The spool is further provided with end discs 13 in the centers of which are provided the apertures 14 which are adapted to register with the openings 12 at each end of the spool when assembled.

As a means for rigidly securing the end discs 13 to the body members 11 there are provided novel securing elements, one form of which is illustrated in Figures 1, 2 and 3 of the drawings. In the embodiment here shown the securing element 15 takes the form of a generally U-shaped flat strip of preferably metallic material which comprises the arms 16 and the inner connecting portion 17. The outer ends of the arms 16 are flared radially outwardly to provide the flanges 18. The arms 16 are further provided with the spurs, prongs, or projections 19 which are preferably formed by partially cutting away a pointed portion of said arms and bending the same outwardly so that it stands at substantially right angles to the wall of the arms 16.

In applying the securing elements 15 to the body portion 11 and end disc 13 the arms 16 are sprung toward each other so that the prongs 19 will clear the walls of the aperture 14 and the opening 12 and the inner end of the element 15 is inserted in the end of the spool. When the outer flanges 18 are in a position where they will overlies and clamp the margins of the aperture 14 in the end disc 13, the member 15 is allowed to expand so that the prongs 19 will engage the walls of the opening 12. A plug 20 which is preferably in the form of a bushing provided with the central bore 21 and the flattened plane lateral surfaces 22 is then forced into the aperture 14 and opening 12 between the arms 16 of the fastening element 15 until the points 19 are firmly embedded in the walls of the opening 12 and the inner end of the plug or bushing 20 abuts the connecting portion 17 which is adapted to bridge the opening 12. For the purpose of providing a bearing for an axle

for the spool 10 the bridging portion 17 is provided with a perforation 25 which is adapted to substantially register with the bore 21 of the bushing member 20. The plug or bushing 20 is preferably constructed with a slight taper in order to wedgingly engage within the end of the spool. It will be seen that withdrawal of the element 15 from the opening 12 is effectively prevented by the interlocking of the prongs 19 with the inner wall of the body member 11 and that the removal of the end discs or flanges 13 is prevented by the clamping action of the flanges 18.

A slightly modified form of the connecting member 15 which has just been described is shown at 15' in Figure 4. This embodiment is the same as the element 15 in all respects except for the provision of the spurs or prongs 27 which are adapted to be embedded in the outer surface of the end discs 13, as in the case of the prongs 27', illustrated in connection with a still further embodiment in Figure 5. In the use of this modification, the plug or bushing 20 might in some constructions be dispensed with except when it is desired to provide a more effective bearing for an axle upon which the spool may be mounted.

To provide an exceedingly rigid construction, two or more of the securing elements 15 or 15' may be employed at a single end of the spool, the arms 16 of which would be spaced around the inner wall of the opening 12 and the bridging or connecting portion 17 would overlap with the perforations 25 in registry.

In Figure 6, there is illustrated a further modification of the securing element which is designated by the numeral 30. This element 30 is seen to comprise substantially half of the element 15', the inner flange or abutment 17' taking the place of the connecting member 17 in the former embodiment. Any convenient number of these elements 30 may be employed, but two of them are illustrated as applied to a spool in Figure 5. A plug or bushing 20 is employed as in the previous cases and the inner end of the plug in the final assembled position is adapted to abut the flanges 17'. In applying these smaller elements 30 it is preferred that the spurs or prongs 27' be applied to the outer surface of the disc 13 and then the prong 19 may be embedded in the wall of the opening 12.

A modification of the securing element 30 is shown at 30' in Figure 7; the outer clamping flange 18 in this case not being provided with a spur or projection as in the case of the element 30, and the lower plug or bushing abutment having the form of a hook 31 which is adapted to engage around the inner rim of the annular plug or bushing 20.

It is to be understood that various other changes and modifications may be made in

the embodiments herein disclosed without departing from the scope of the invention as defined in 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 spool, in combination, a body member having an opening in the end thereof, an end disc provided with a central aperture adapted to register with said opening when the spool is assembled, and means for securing said disc to said body member comprising a fastening element adapted to be disposed within the opening in said body member and formed with a connecting portion at its inner end and a pair of arms adapted to extend outwardly of said opening from said connecting portion, means associated with said arms for interlocking with a portion of said body member and means also associated with said arms for retaining said disc.

2. In a spool, in combination, a body member having an opening in the end thereof, an end disc provided with a central aperture adapted to register with said opening when the spool is assembled, and means for securing said disc to said body member comprising a substantially U-shaped fastening element adapted to extend into the opening in said body member and formed with a pair of arms adapted to extend along the wall of said opening in a direction parallel to the axis of said body member and a connecting portion adapted to bridge said opening at the inner ends of said arms, means associated with said arms for interlocking with a portion of said body member and means also associated with said arms for retaining said disc.

3. In a spool, in combination, a body member having an opening in the end thereof, an end disc provided with a central aperture adapted to register with said opening when the spool is assembled, and means for securing said disc to said body member comprising a substantially U-shaped fastening element adapted to extend into the opening in said body member and formed with a pair of arms adapted to extend along the wall of said opening in a direction parallel to the axis of said body member and a connecting portion adapted to bridge said opening at the inner ends of said arms, a prong formed on each of said arms and adapted to be embedded in the walls of the opening in said body member and means also associated with said arms for retaining said disc.

4. In a spool, in combination, a body member having an opening in the end thereof, an end disc provided with a central aperture adapted to register with said opening when the spool is assembled, and means for securing said disc to said body member comprising a substantially U-shaped fastening element adapted to extend into the opening in said body member and formed with a pair of arms

adapted to extend along the wall of said opening in a direction parallel to the axis of said body member and a connecting portion adapted to bridge said opening at the inner ends of said arms, means associated with said arms for interlocking with a portion of said body member and flanges formed on the outer ends of said arms and adapted to overlie the margins of the aperture in said end disc.

5. In a spool, in combination, a body member having an opening in the end thereof, an end disc provided with a central aperture adapted to register with said opening when the spool is assembled, and means for securing said disc to said body member comprising a substantially U-shaped fastening element formed from a flat strip of metal and adapted to extend into the opening in said body member and provided with a pair of arms adapted to extend along the wall of said opening in a direction parallel to the axis of said body member and a connecting portion adapted to bridge said opening at the inner ends of said arms, a prong formed on each of said arms and adapted to be embedded in the walls of the opening in said body member and flanges formed on the outer ends of said arms and adapted to overlie the margins of the aperture in said end disc.

6. In a spool, in combination, a body member having an opening in the end thereof, an end disc provided with a central aperture adapted to register with said opening when the spool is assembled, and means for securing said disc to said body member comprising a substantially U-shaped fastening element adapted to extend into the opening in said body member and formed with a pair of arms adapted to extend along the wall of said opening in a direction parallel to the axis of said body member and a connecting portion adapted to bridge said opening at the inner ends of said arms, a prong formed upon each of said arms for interlocking with a portion of said body member and flanges formed on the outer ends of said arms and adapted to overlie the margins of the aperture in said end disc, and a plug adapted to be forced into said opening between said arms whereby said arms are expanded so that said prongs are embedded in the walls of said opening.

7. The combination set forth in claim 6 in which said plug is provided with a central bore for the insertion of an axle or the like and in which said bridging member is provided with a perforation registering substantially with the bore of said plug.

8. In a spool, in combination, a body member having an opening in the end thereof, an end disc provided with a central aperture adapted to register with said opening when the spool is assembled, and means for securing said disc to said body member comprising a substantially U-shaped fastening element adapted to extend into the opening in

said body member and formed with a pair of arms adapted to extend along the wall of said opening in a direction parallel to the axis of said body member and a connecting portion adapted to bridge said opening at the inner ends of said arms, means associated with said arms for interlocking with a portion of said body member, flanges formed on the outer ends of said arms and adapted to overlie the margins of the aperture in said end disc, and spurs formed on said overlying flanges and adapted to be embedded in the material of said end disc.

9. In a spool, in combination, a body member having an opening in the end thereof, an end disc provided with a central aperture adapted to register with said opening when the spool is assembled, and means for securing said disc to said body member comprising a plurality of fastening elements adapted to extend into the opening in said body member, a projection associated with each of said elements and adapted to be embedded in the wall of said opening, and a projection formed on the outer end of each of said elements adapted to overlie the margin of the aperture in said disc, an abutment formed on the inner end of each of said elements, and a plug adapted to be wedgingly inserted in said opening whereby said elements are pressed against the walls of said opening and said first named projection is embedded in said wall, said plug adapted to contact with said abutments when in assembled position.

10. In a spool, in combination, a body member having an opening in the end thereof, an end disc provided with a central aperture adapted to register with said opening when the spool is assembled, and means for securing said disc to said body member comprising a plurality of fastening elements adapted to extend into the opening in said body member, a projection associated with each of said elements and adapted to be embedded in the wall of said opening, and a projection formed on the outer end of each of said elements adapted to overlie the margin of the aperture in said disc, a hook-shaped abutment formed on the inner end of each of said elements, and a perforated plug adapted to be wedgingly inserted in said opening whereby said elements are pressed against the walls of said opening and said first named projection is embedded in said wall, said hook-shaped abutments adapted to engage around the inner rim of said plug.

11. In a spool, in combination, a body member having an opening in the end thereof, an end disc provided with a central aperture adapted to register with said opening when the spool is assembled, and means for securing said disc to said body member comprising a plurality of fastening elements adapted to extend into the opening in the body member at spaced intervals around the periphery

of said opening, means on each of said elements adapted to be embedded in the material of said body member, means on each of said elements adapted to overlie and retain the margin of the aperture of said end disc,
5 a flange on the inner end of each of said elements and adapted to project toward the center of said opening, a bushing adapted to be wedgingly inserted in said opening and
10 having flattened faces thereon for contacting with said fastening elements.

In testimony whereof I hereunto affix my signature.

CHARLES K. DUNLAP.

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