Feb. 16, 1932. J. K. TAYLOR 1,845,820

SPOOL

Filed April 22, 1931 2 Sheets-Sheet 1

FIG. 1.

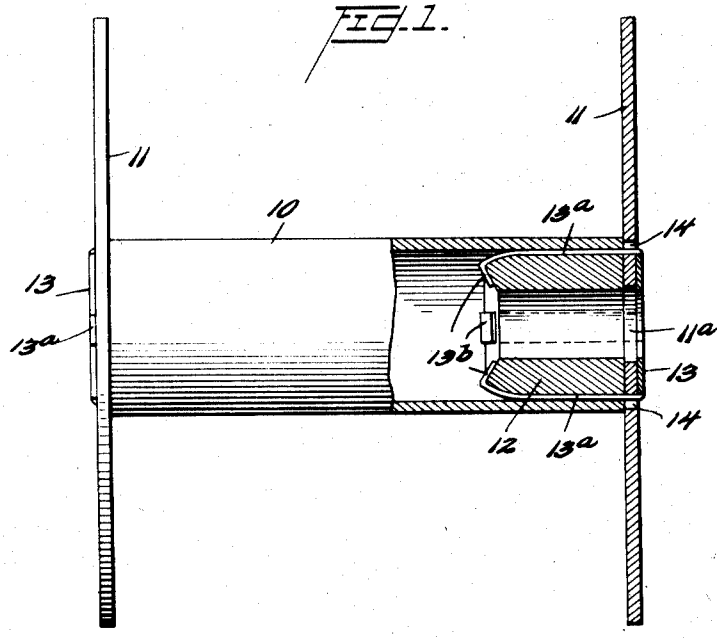


FIG. 2.

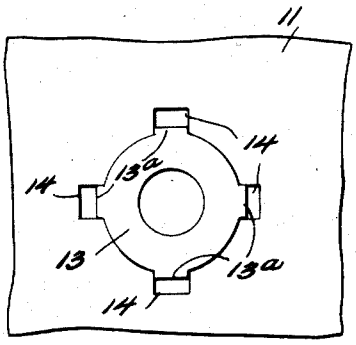
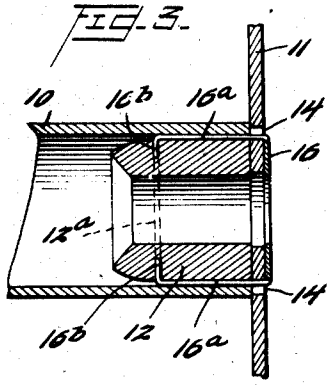


FIG. 3.



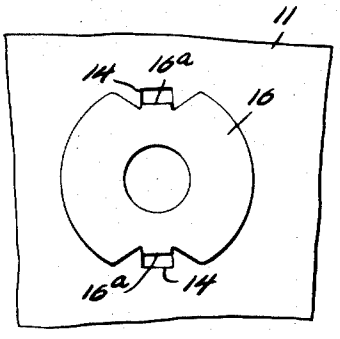


FIG. 4.

Inventor

Joseph K. Taylor,

By Wilson, Crit, Morse & Grindle

Attorneys

Feb. 16, 1932. J. K. TAYLOR 1,845,820

SPOOL

Filed April 22, 1931 2 Sheets-Sheet 2

FIG. 5.

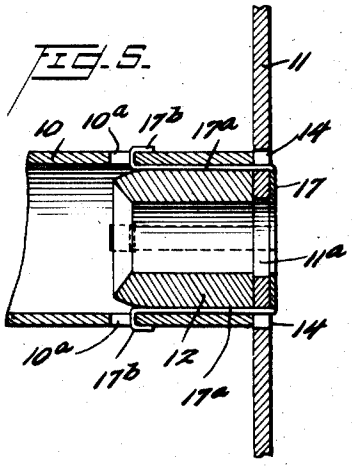


FIG. 8.

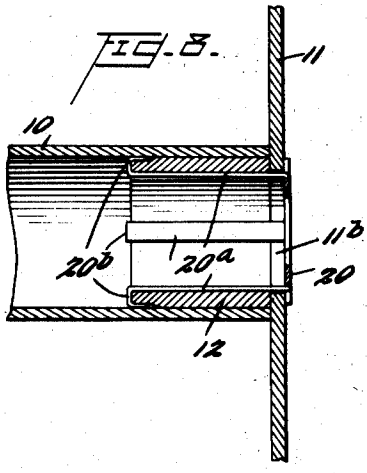


FIG. 6.

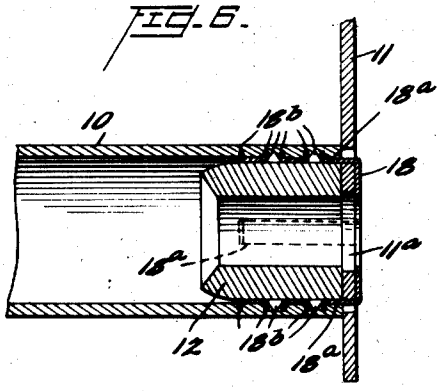
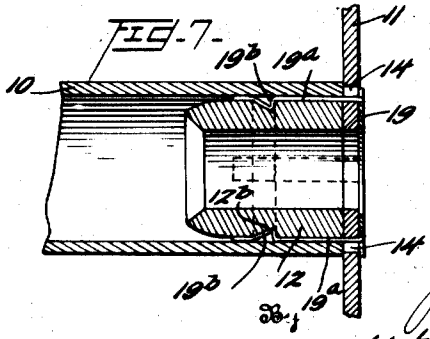


FIG. 7.



Inventor

Joseph K. Taylor,

Watson, Cole, Morse & Greindle

Attorneys

Patented Feb. 16, 1932 1,845,820

UNITED STATES PATENT OFFICE

JOSEPH K. TAYLOR, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO SONOCO PRODUCTS COMPANY, OF HARTSVILLE, SOUTH CAROLINA, A CORPORATION OF SOUTH CAROLINA

SPOOL

Application filed April 22, 1931. Serial No. 532,063.

This invention relates to certain detailed improvements in winding devices such as spools, bobbins, reels or the like, and particularly to the means for securing the end flanges or disks of such a device to the body portion or barrel thereof, and its object is to provide means of that kind which are simple and practical, which will serve to rigidly secure the disks or flanges to the barrel or body portion and which will enable rapid and cheap production of such devices.

In the accompanying drawings forming a part hereof, certain embodiments of the invention are illustrated by way of example.

In said drawings:

Figure 1 is a view in elevation of a spool embodying one form of the invention, one end thereof being shown in longitudinal section to more clearly illustrate the means employed for securing the end disks to the barrel;

Figure 2 is an end elevation of the arrangement shown in Fig. 1;

Figure 3 illustrates a slightly modified arrangement of fastening means;

Figure 4 is an end elevation of the construction shown in Fig. 3; and

Figures 5, 6, 7 and 8 illustrate further modified arrangements of the securing means by which the disks or flanges are fastened to the barrel.

Referring to the drawings in detail, in each of the figures the barrel or body portion is indicated at 10, to each end of which a flange or disk 11 is secured. The barrel 10 is made of any suitable material such as hard fibrous material and is preferably tubular or provided with an opening in each end. The disks 11 are also preferably made of hard fiber board and in the forms shown in Figs. 1 to 7 inclusive are provided with an aperture 11*a* substantially at the center thereof which is adapted to register with the opening in the end of the barrel 10 although as shown the opening in the disk is smaller than the opening in the end of the barrel. In each of the forms of the invention illustrated, a tubular plug 12 is arranged in the end of the barrel 10, preferably with the base or outer end of the plug abutting against the inner surface of the disk 11, the bore of the plug preferably being substantially the same size as the aperture 11*a* in the disk 11.

For the purpose of securing the parts above described in rigid relation, fastening elements are employed which are preferably made of flexible metal and which are shown of somewhat different form in the various figures of the drawings.

In the form shown in Figures 1 and 2, the fastening element 13 comprises a plate or body of substantially annular form which is arranged against the outer surface of the disk 11 and such fastening element also includes integral arms 13*a* which extend through openings 14 in the disk and into the barrel 10. These arms are arranged parallel to the axis of the plug 12 and barrel 10 and are positioned between the outer surface of the plug and the wall of the barrel. Adjacent its inner end the plug 12 is preferably slightly tapered and its inner end is beveled or inclined inwardly. The inner ends of the arms 13*a* are bent to contact with the tapered portion of the plug and further bent as shown at 13*b* into engagement with the inclined inner end of the plug. The openings 14 in the disk 11 are spaced outwardly from the central aperture 11*a* and are so positioned as to be substantially in line with the outer surface of the plug 12.

In the form shown in Figures 3 and 4, the fastening element 16 is similar to that shown in Figures 1 and 2, being provided with two arms 16*a* which extend through the openings 14 in the disk 11 and between the barrel 10 and the plug 12. In this arrangement the plug is provided with recesses 12*a* which may be in the form of a circumferential groove formed in the plug and the inner ends 16*b* of the arms are bent to engage in such groove or recesses.

In the construction shown in Figure 5, the fastening element 17 is provided with a plurality of arms 17*a* which extend inwardly through the openings 14 of the disk 11 and between the plug 12 and the wall of the barrel. In this form, however, the inner ends 17*b* of the arms are bent outwardly and en-

gage in openings 10*a* formed in the barrel 10, the extreme ends 17*b* of the arms being bent down into engagement with the outer surface of the barrel.

In the form shown in Figure 6, the fastening device 18 also engages the outer surface of the disk 11 and is provided with arms 18*a* which extend through the openings 14 of the disk and between the barrel 10 and the plug 12. In this arrangement the arms 18*a* are provided with outwardly extending prongs 18*b* which are adapted to embed themselves in the material of the barrel.

In the arrangement shown in Figure 7, the outer periphery of the plug is provided with a circumferential groove 12*b*. The fastening device 19, as in the other forms, has a flat portion which engages the outer surface of the disk 11 and arms 19*a* which extend through the openings 14 of the disk 11 and are positioned between the plug and the barrel, the arms intermediate their length being bent to form lugs or projections 19*b* which are adapted to engage in the groove 12*b* of the plug.

The arrangement shown in Figure 8 is slightly different from those heretofore described. In this form the disk 11 is provided with a relatively large opening 11*b* and the arms 20*a* of the fastening device 20 extend through this opening and through the bore of the plug 12, the inner ends 20*b* of the arms being bent back into engagement with the inner end of the plug.

In assembling the parts of the construction as shown in Figures 1, 3 and 7, the arms of the fastening element are first inserted through the openings 14 in the disk 11. The plug 12 is then inserted between the arms so as to abut against the inner surface of the disk 11. In the form shown in Figure 1, the outer ends of the arms are then bent into tight engagement with the plug, which serves to rigidly secure the plug to the disk. In the form shown in Figure 3, the ends of the arms 16*b* are forced into the groove or recesses 12*a* of the plug, which likewise firmly secures the plug to the disk. In the form shown in Figure 7, the arms are bent or pressed into the groove 12*b* of the plug or, if desired, the lugs or projections 19*b* can be formed on the arms previous to assemblage of the parts. In all of these arrangements, after the plug is firmly attached to the disk 11, the parts are assembled with the barrel by inserting or forcing the plug into the end of the barrel preferably until the end of the barrel abuts against the inner surface of the disk. Glue or any suitable cement is preferably used to further secure the plug in the barrel.

In the arrangement shown in Figure 5, the parts are assembled in a similar manner except that after the assembled plug and disk are forced into the barrel, the inner ends of the arms 17*a* are forced outwardly in any suitable manner through the openings 10*a* of the barrel and bent into tight engagement with the outer surface thereof.

The procedure in connection with the form shown in Figure 6 is slightly different. In this form the disk 11 and the fastening device 18 are first assembled and the arms 18*a* forced into the end of the barrel 10. The plug 12 which has been previously placed in the barrel or which is dropped in from the opposite end is then forced between the arms 18*a* and this serves to press the arms outwardly and cause the projections 18*b* to become embedded in the material of the barrel.

In the arrangement shown in Figure 8, the arms 20*a* of the fastening device 20 are inserted through the opening 11*b* of the disk 11 and the plug 12*a* then forced down over the arms and into engagement with the inner surface of the disk, after which the ends of the arms are bent into engagement with the inner end of the plug, the assembled disk and plug being inserted in the barrel as heretofore described and secured in place by a suitable glue or cement.

As already noted, in the various forms shown in Figures 1 to 7 inclusive, the fastening device has a portion which engages the outer surface of the disk 11 and the arms thereof extend through the openings 14 in the disk. This arrangement aids materially in forming a rigid structure and serves to firmly hold the disk in engagement with the end of the barrel. In each of the forms shown, the plug 12 preferably has its outer end abutting against the inner surface of the disk 11 and as the plug is firmly glued or cemented to the barrel this furnishes additional strength and firmness of attachment between the barrel and the disks.

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 barrel having an opening in the end thereof, a tubular plug mounted in said opening, a disk having a central aperture in register with the bore of said plug, said barrel and plug having the ends thereof arranged in abutting relation to the inner suface of said disk, a metallic fastening element having a flat annular portion arranged against the outer surface of said disk, and also having a plurality of circumferentially spaced arms extending from the outer periphery of said flat portion through said disk substantially parallel to the axis of said barrel and plug, said arms being disposed for at least a portion of their length between said plug and barrel, and a projection on each of said arms engaging one of said last named parts.

2. In a spool, in combination, a barrel having an opening in the end thereof, a tubular plug mounted in said opening, a disk forming

the end of said spool and having a central aperture in register with the bore of said plug, said disk also having other openings therein adjacent said central aperture, a metallic fastening device having a flat annular portion arranged against the outer surface of said disk and also having circumferentially spaced arms extending from the outer periphery of said annular portion through said openings in the disk substantially parallel to the axis of said barrel and plug, said arms being arranged for at least a portion of their lengths between said plug and barrel, and a projection on each of said arms engaging one of said last named parts.

3. In a spool, in combination, a barrel having an opening in the end thereof, a plug mounted in said opening, a disk forming the end of said spool, said barrel and plug having the ends thereof arranged to abut against the inner surface of said disk, a metallic fastening element having a flat annular portion arranged against the outer surface of said disk and also having a plurality of circumferentially spaced arms extending from the outer periphery of said annular portion through said disk substantially parallel to the axis of said barrel and plug, said arms being disposed for at least a portion of their lengths between said plug and barrel and a projection on each of said arms engaging said plug.

4. In a spool, in combination, a barrel having an opening in the end thereof, a tubular plug mounted in said opening, a disk forming the end of said spool and having a central aperture in register with the bore of said plug, said disk also having other openings therein adjacent said central aperture, said barrel and plug having the ends thereof arranged to abut against the inner surface of said disk, a metallic fastening device having a flat annular portion arranged against the outer surface of said disk and also having circumferentially spaced arms extending from the outer periphery of said annular portion through said openings in the disk substantially parallel to the axis of said barrel and plug, said arms being arranged between said plug and barrel and a projection on each of said arms engaging said plug.

5. In a spool, in combination, a tubular barrel having a plurality of openings in the wall thereof, a tubular plug arranged in said barrel, a disk forming the end of said spool and having a central aperture in register with the bore of said plug, a metallic fastening device having a portion arranged against the outer surface of said disk and also having spaced arms extending through said disk and arranged between said plug and barrel, the inner ends of said arms extending outwardly through said opening in the barrel and being bent into engagement therewith.

6. In a spool, in combination, a tubular barrel, a tubular plug arranged in said barrel, a disk forming the end of said spool, said disk having a central aperture in register with the bore of said plug, said plug having a recess on the outer surface thereof, a metallic fastening device having a portion arranged against the outer surface of said disk and also having spaced arms extending through said disk and arranged between said plug and barrel, each of said arms having a projection thereon engaging the recess in said plug.

In testimony whereof I hereunto affix my signature.

JOSEPH K. TAYLOR.