Dec. 23, 1924. 1,520,379

H. H. WERMINE

SPOOL

Filed July 26, 1924

Fig. 2

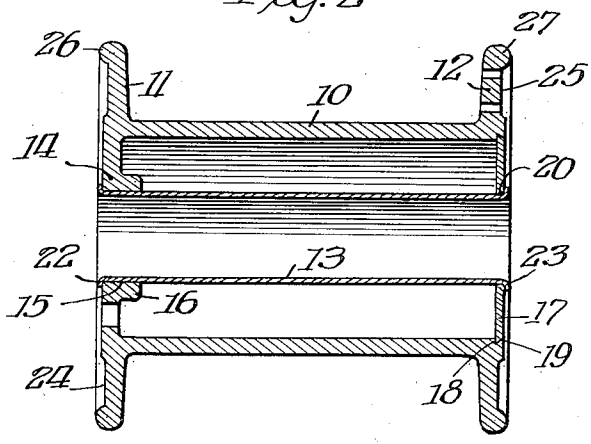


Fig. 3

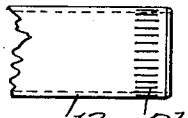


Fig. 4

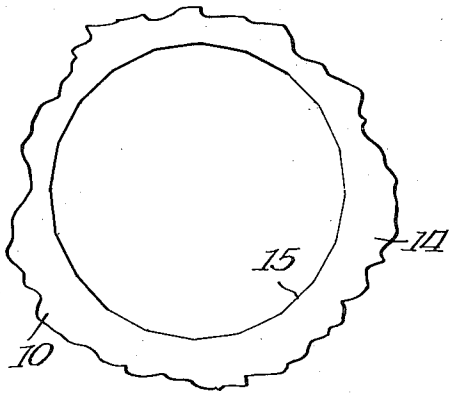


Fig. 1

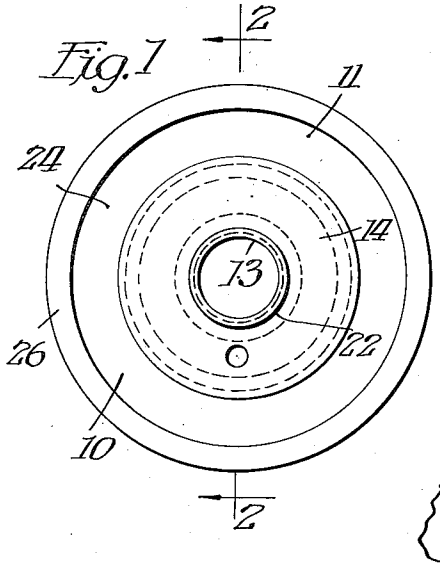
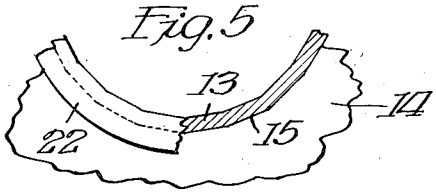


Fig. 5



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UNITED STATES PATENT OFFICE.

HUGO H. WERMINE, OF CHICAGO, ILLINOIS, ASSIGNOR TO BELDEN MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SPOOL.

Application filed July 26, 1924. Serial No. 728,291.

To all whom it may concern:

Be it known that I, HUGO H. WERMINE, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Spools, of which the following is a specification.

This invention relates to spools for winding wire and the like and has for its primary object to provide an article for this purpose which is simple and durable in construction and may be economically produced.

The many other objects and advantages of my invention will be better understood by reference to the following specification when considered in connection with the accompanying drawing illustrating a selected embodiment thereof, in which:—

Fig. 1 is an end elevation of a spool embodying the principles of my invention.

Fig. 2 is a central longitudinal section on the line 2—2 of Fig. 1.

Fig. 3 is an elevation of one end portion of the central tube.

Fig. 4 is an enlarged view of a portion of one end of the spool before the central tube is inserted, and

Fig. 5 is the same as Fig. 4 after the tube is inserted and secured in place.

Referring to the drawing, the spool comprises a body 10 substantially tubular in form and provided at its ends with integral flanges or heads 11 and 12. A tube 13 extends longitudinally through the body and is supported at its ends by suitable bearings. One of these bearings in the present embodiment is provided by a disk-like flange 14 formed integral with the body and having a central opening 15 to fit the tube 13. An inwardly projecting annular flange 16 preferably surrounds this opening to provide a longer bearing surface for the tube. The bearing for the opposite end of the tube is provided by a disk or washer 17 which fits within the slightly enlarged outer end of the bore and abuts the shoulder 18. An annular lip 19 on the end of the body is spun or pressed over the beveled outer edge of this disk or washer during the assembly process to permanently retain the same in position. This washer has a central or bearing opening 20 corresponding to the opening 15 at the opposite end of the spool.

In order to prevent rotation of the tube 13 relative to the body, I prefer to form the wall of the bearing opening 15 polygonal or of form other than round as is illustrated in Fig. 4. This same method may be utilized in the disk or washer 17 but in the present embodiment I have knurled the end portion of the tube as at 21 where it passes through the disk.

I prefer to form the body of the spool of aluminum alloy, bakelite or other material which may be readily cast, moulded or otherwise formed in the desired shape and which combines lightness with durability and strength. The tube 13 and washer 17 are preferably of steel. The tube is inserted through the end bearings and the end edges are pressed or spun over as at 22 and 23. The ends of the tube are preferably slightly expanded during the assembly process. This causes the tube to conform to the shape of the bearing opening 15 as illustrated in Fig. 5, and forces the ribs or protuberances provided by the knurling at 21 into the wall of the opening 20. The tube is thus held rigidly by the integral bearing at one end and the disk or washer 17 is fixed on the other end of the tube.

I prefer to groove the ends of the body as at 24 and 25 and provide beads at the outer edges of the flanges 11 and 12 as at 26 and 27. This strengthens the flanges without increasing the weight of the spool.

From the foregoing description it will be evident that my improved spool construction combines lightness with strength and durability and may be economically produced.

The body or barrel of the spool is preferably of relatively large diameter whereas the tube therein is of relatively small diameter and considerably spaced from the wall of the bore. This is particularly advantageous as the hollow wall construction makes it possible to build a large spool which is light in weight and requires very little metal. The substantially uniform bore throughout the finished spool is likewise advantageous.

I am aware that the form and arrangement of parts may be considerably changed without departing from the spirit of my invention, and I reserve the right to make all such as fairly fall within the scope of the following claims.

I claim as my invention:

1. A spool comprising a molded tubular body, a tube extending longitudinally

through the bore of said body, a bearing for one end of said tube formed integral with said body, and a disk seated in the opposite end of said body and forming the bearing for the corresponding end of said tube.

2. A spool comprising a molded tubular body, a tube extending longitudinally through the bore of said body, a bearing for one end of said tube formed integral with said body, a disk seated in the opposite end of said body and forming the bearing for the corresponding end of said tube, and means for preventing relative rotation of the tube and body.

3. A spool comprising a molded tubular body, a tube extending longitudinally through the bore of said body, a bearing for one end of said tube formed integral with said body, and a disk seated in the opposite end of said body and forming the bearing for the corresponding end of said tube, the end edge portions of the tube being turned outwardly to interlock with the corresponding outer faces of said bearings.

4. A spool comprising a molded tubular body, a tube extending longitudinally through the bore of said body, a bearing for one end of said tube formed integral with said body, and a disk seated in the opposite end of said body and forming the bearing for the corresponding end of said tube, the end edges of the tube being spun over upon the corresponding outer faces of said bearings to prevent endwise movement of the tube within the body.

5. A spool comprising a molded tubular body, a tube extending longitudinally through the bore of said body, a bearing for one end of said tube formed integral with said body, and a disk seated in the opposite end of said body and forming the bearing for the corresponding end of said tube, the walls of the opening in said integral bearing being initially of different conformation than the periphery of the portion of the tube passing therethrough and said portion being subjected to internal pressure during the assembly operation to cause the tube to fit said walls.

6. A spool comprising a molded tubular body, a tube extending longitudinally through the bore of said body, bearings for said tube at substantially opposite ends of said bore, one of said bearings comprising a disk seated in the body and provided with a central opening to receive and fit said tube, and means for preventing relative rotation of said tube and disk.

7. A spool comprising a molded tubular body, a tube extending longitudinally through the bore of said body, bearings for said tube at the opposite ends of said bore, one of said bearings comprising a disk seated in the bore and having a central opening to receive and fit said tube, the periphery of the portion of said tube within said opening being knurled and the knurled portion being expanded during the assembly operation to prevent relative rotation of said tube and disk.

8. A spool comprising a molded tubular body having one end portion of the bore enlarged and an annular lip on the end surrounding said bore, a disk fitting the enlarged portion of the bore and being retained therein against the shoulder formed by such enlargement by said lip, said disk being provided with a central opening, and a tube extending through the bore of said body and having one end portion fitting within said opening.

9. A spool comprising a molded tubular body having one end portion of the bore enlarged and an annular lip on the end surrounding said bore, a disk fitting the enlarged portion of the bore and being retained therein against the shoulder formed by such enlargement by said lip, said disk being provided with a central opening, a tube extending through the bore of said body and having one end portion fitting within said opening, and means for preventing relative rotation of said tube and disk.

10. A spool comprising a one-piece molded barrel having external projecting integral end flanges thereon, co-axially apertured closures for the ends of the barrel, and a tube disposed co-axially within the barrel and fitting the apertures of the closures and tying together said closures, one of said closures comprising a washer separate from said barrel and flanges and secured co-axially to the barrel.

11. A spool comprising a one-piece molded barrel having external projecting integral end flanges thereon, co-axially apertured closures for the ends of the barrel, and a tube disposed co-axially within the barrel and fitting the apertures of the closures and tying together said closures, one of said closures comprising a washer separate from said barrel and said flanges and secured co-axially to the barrel, one end of the barrel being externally recessed to fit and form a seat for said last named closure.

12. A spool comprising a hollow metal barrel of relatively large diameter, centrally apertured closures for the ends of said barrel, one of said closures being initially separate from the barrel, and a tube of smaller diameter than the bore of the barrel connecting said closures and fitting the apertures therein.

13. A spool comprising a hollow metal barrel of relatively large diameter, centrally apertured closures for the ends of said barrel, one of said closures being initially separate from the barrel, and a tube of smaller diameter than the bore of the barrel

connecting said closures and interlocked with said apertures.

14. A spool comprising a one-piece molded barrel having external projecting integral end flanges thereon, co-axially apertured closures for the ends of the barrel, and a tube disposed co-axially within the barrel and fitting the apertures of the closures and tying together said closures, one of said closures comprising a sheet metal washer separate from said barrel and said flanges and secured at its periphery to the adjacent end of the barrel.

HUGO H. WERMINE.