Nov. 3, 1925. 1,560,120

E. S. TEED

SPOOL CONSTRUCTION

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Fig. 1.

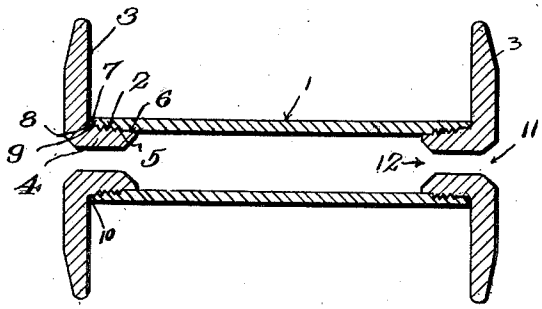


Fig. 6.

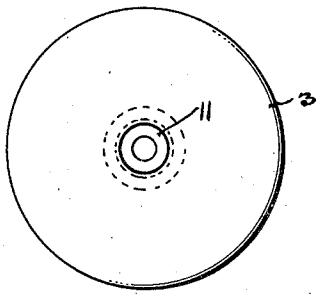


Fig. 2.

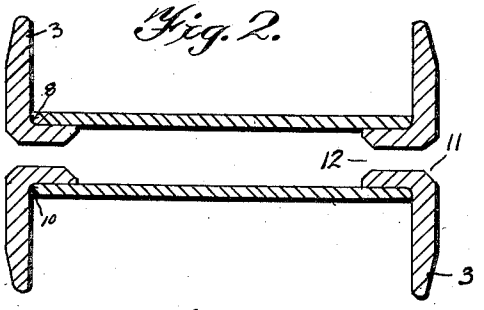


Fig. 7.

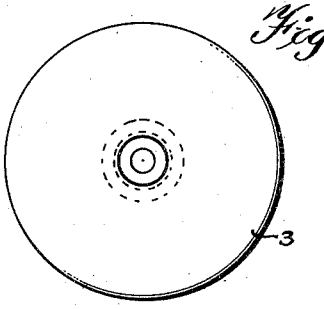


Fig. 3.

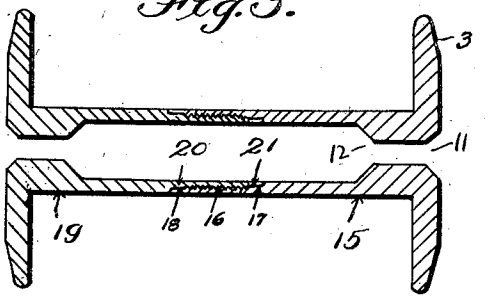
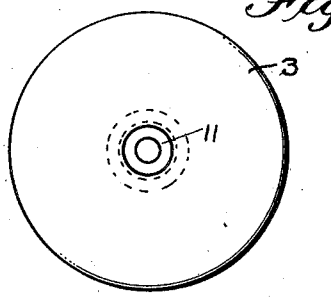


Fig. 8.



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Fig. 4.

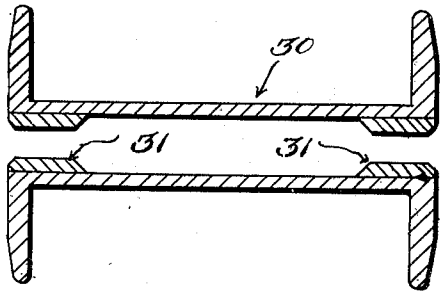


Fig. 5.

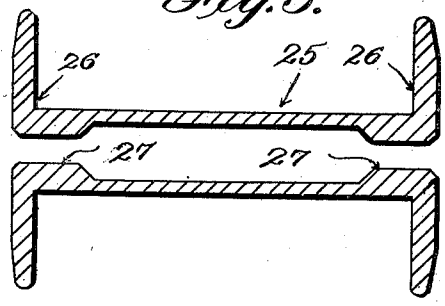


Fig. 7.

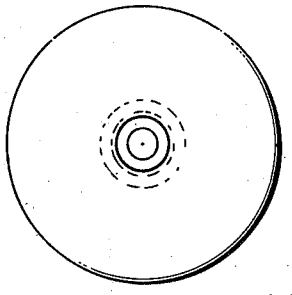


Fig. 10.

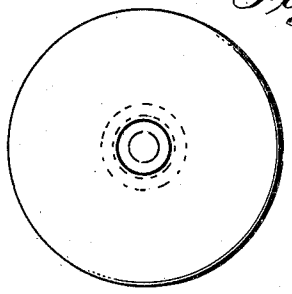
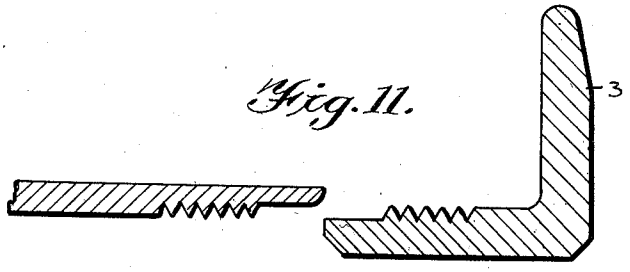


Fig. 11.



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UNITED STATES PATENT OFFICE.

EARL S. TEED, OF AKRON, OHIO.

SPOOL CONSTRUCTION.

Application filed January 12, 1923. Serial No. 612,200.

To all whom it may concern:

Be it known that I, EARL S. TEED, a citizen of the United States, and a resident of Akron, county of Summit, and State of Ohio, have invented a new and useful Improvement in Spool Construction, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention relates to spools and the construction of the same and more particularly to the construction of large spools such as are used in the textile industry for holding the threads or yarns. In particular then, the present invention relates to the construction of such spools from rubber or other suitable compounds whereby the breakage may be kept low even with hard usage and rough handling. Another object is the construction of the spools from small preformed units whereby the expense of molding and manufacture may be reduced. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:

Figs. 1, 2, 3, 4, and 5 are central longitudinal sections through five different types of spools and Figs. 6, 7, 8, 9, and 10 are end elevations of the forms shown in Figs. 1, 2, 3, 4, and 5 respectively. Fig. 11 is a fragmental section showing on an enlarged scale a portion of the parts shown in Fig. 1, the proportions being slightly altered.

In the present type of spools it is necessary to provide a cylinder which is hollow and two spool ends which must be securely attached thereto and the cylinder must be provided with bushings or bearings preferably at the ends thereof.

In the form shown in Fig. 1 there is a cylinder or tubular member 1 which is interiorly threaded, as at 2, at the ends to receive the spool ends 3 which, as shown, are disks having an inwardly projecting hollow boss 4 exteriorly threaded at 5 to fit the threaded tube. In order to obtain a tight fit between the ends and tube the boss is provided with a plain unthreaded portion 6 at its inner end adapted to snugly fit the bore of the tube inside of the threads and a similar unthreaded portion 7 is provided on the boss adjacent the disk, this portion ending in a curve 8 and the tube is similarly formed with an unthreaded portion 9 ending in a curve 10.

Both ends of the hole through the boss are formed with countersunk areas 11 and 12 to aid in mounting the spool readily on the pin or rod on which it is held during both the operation of winding the thread or yarn thereon and the unwinding of the thread therefrom. The central bosses of the ends form two bearings for the spool when thus in use.

In Fig. 2 a modified form is shown in which neither the tube nor the boss is threaded and in this form the boss is pressed into the tubular member and both members have the curved ends 8 and 10 as in the first form.

In both of these forms the ends are preferably applied with a slight amount of glue, rubber cement or other adhesive to aid in fastening the parts securely together. By curving the ends of the tube and the boss the depth through the end at the juncture of the boss is increased to add strength at this point and as the boss has a bearing at each end in the tube at the straight portions 6 and 7 thus reducing the strain on the threads in the form shown in Fig. 1. In both of the forms the separate parts are kept as small as possible to reduce the cost of molding and the compound is of course of such a character as to be cured or vulcanized or changed by heat and pressure into a hard substance which maintains its shape and hardness under all normal variations in temperature and but one which retains a certain amount of resiliency so as not to be easily cracked or broken.

A modified form of spool is shown in Figs. 3 and 8, in which the tubular member is divided, the ends being formed integrally with halves of the tube and in this form the right hand half 15 of the spool is provided with an interiorly threaded inner end 16 having plain unthreaded portions 17 and 18

at the ends of the threads while the left hand half 19 of the spool has the tube formed with an exteriorly threaded end with corresponding unthreaded surfaces 20 and 21.

In the last two forms shown the entire spool comprising tubular member and ends is molded as a unit and in Fig. 5 the spool 25 has two integral ends 26 having bearings 27 at the ends to correspond with the bosses formed on the separable ends. In the form shown in Fig. 4 the spool 30 is formed with the tubular member having a uniform interior aperture and separate bushings 31 are pressed into the ends of the aperture and are glued or cemented in place.

These present spools when made of correct compounds are light enough to meet service requirements and yet are very strong and stand the hard usage and handling to which they are submitted. By the structure of the joint between the tubular member and the ends the threads do not have to take the strains and yet the material through the line between the boss and the spool end is maintained at its greatest thickness to reduce breakage. The material is such that the spools do not crack or split and they have sufficient elasticity to stand up under careless and rough handling. The parts are small and easily molded and even in the case of the unit type of construction may easily be made. As the parts are mold cured the surfaces are smooth and the spools of uniform size and thus no machine work need be done. The compound does not shrink, warp or deteriorate under moisture or heat to which it is subjected in use so that replacement is kept low.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In spool construction, the combination of a tubular member formed of vulcanized compound, having a relatively thin wall, and being interiorly threaded at its ends, and end members of like material provided with hollow bosses threaded throughout a portion of their length to engage with said threaded tubular member ends, said bosses also being provided with an unthreaded smooth portion adapted to fit and bear against the unthreaded portion of said tubular member.

2. In spool construction, the combination of a tubular member formed of vulcanized compound, having a relatively thin wall, and being interiorly threaded near its ends, and end members provided with hollow bosses and having screw threads over a portion thereof to engage with said threads on said tubular member to hold the ends in place, said bosses having smooth portions adapted to snugly fit the bore of said tubular member to obtain bearing thereagainst over area of said tubular member of full thickness.

3. In spool construction, the combination of a tubular member having interiorly threaded ends formed with an outer portion beyond the threads of a diameter greater than the diameter of the bottom of the threads, and end members of disk shape formed with threaded hollow bosses, the bosses having an unthreaded portion adjacent the disk of a diameter to fit the smooth portion of said tube.

4. In spool construction, the combination of a tubular member having interiorly threaded ends formed with an outer portion beyond the threads of a diameter greater than the diameter of the bottom of the threads, and end members of disk shape formed with threaded hollow bosses, the bosses having an unthreaded portion adjacent the disk of a diameter to fit the smooth portion of the said tube, said boss having its inner end unthreaded to form a barrel adapted to snugly fit the bore of said tubular member inwardly of the threaded portion.

5. In spool construction, the combination of a tubular member having interior screw threads adjacent its ends, such threads terminating inwardly of the ends of the tube and leaving smooth portions of greater diameter than the bottom of such threads, said smooth portions being curved toward the outer edge of the tubular member, and end members comprising disks having inwardly extending hollow bosses, having a smooth portion adjacent the disk and curving into the disk, said bosses being threaded to engage the screw threads in said tubular member and terminating in an unthreaded portion adapted to snugly fit the internal bore of said tubular member inwardly of such threads.

Signed by me this 16th day of December, 1922.

EARL S. TEED.