March 20, 1928. 1,663,502

C. LEA

YARN SPOOL FOR TUBE FRAMES

Filed Feb. 15, 1927

Fig. 1.

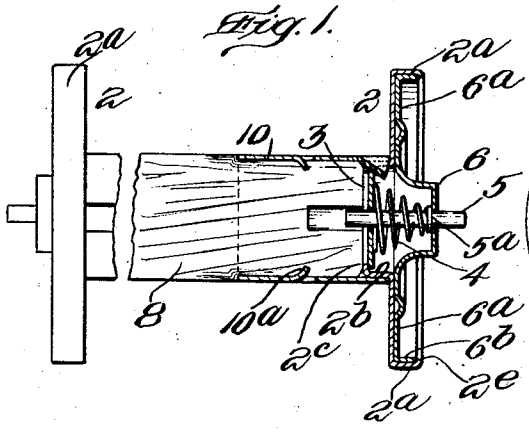


Fig. 2.

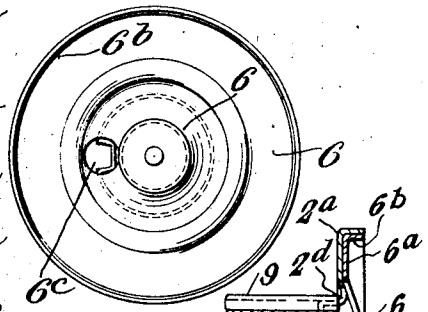


Fig. 5.

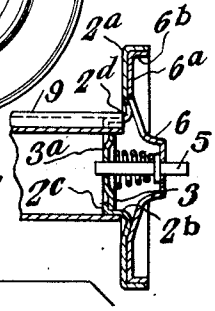
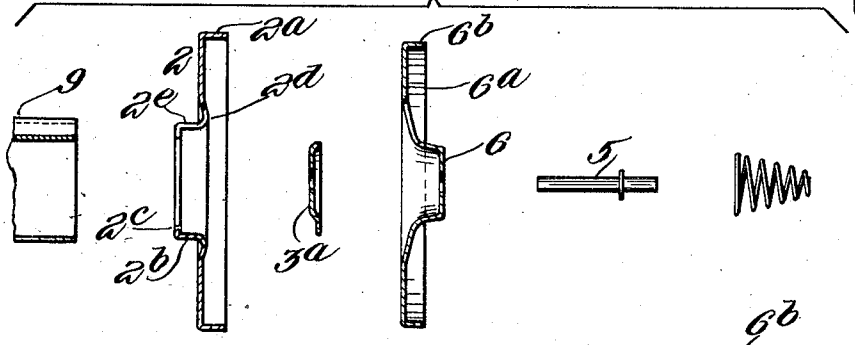


Fig. 3.



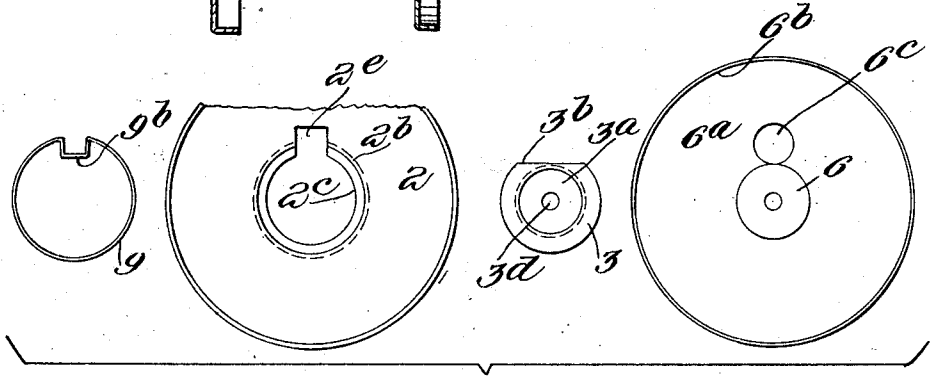


Fig. 4.

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UNITED STATES PATENT OFFICE.

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YARN SPOOL FOR TUBE FRAMES.

Application filed February 15, 1927. Serial No. 168,322.

This invention relates to yarn spools, and particularly to a type of spool that is adapted for use in Axminster tube-frames whose dimensional construction is subject to considerable variation as to the actual depth of the spool heads at the hub portion, which supports an axially yieldable pintle or journal in order to satisfy the particular requirements of different mills.

To make a complete set of dies, in order to satisfy these greatly varied requirements of the individual mills, entails a very heavy expense which it is one object of the present improvement to obviate. Another object is to provide a construction of head that is light yet strong, and that provides for any requisite spacing apart of the inner and outer bearings of the spring pressed pintles that form spool journals for rotatably and removably mounting the spools in their bearing stands or brackets.

With these and other objects in view I have devised a spool construction in which the hollow or tubular end portion of the spool receives interiorly an offset annular attaching flange with which is associated two separate opposed, axially perforated bearing members in which is slidably mounted an axial bearing pintle or journal normally but yieldingly thrust outward by a spring located between the two spaced pintle bearing members.

Since the two bearing members may either or both be cupped or dished to any desired degree, and are separately applied to the end head, the pintle bearings may be spaced apart to any desired distance to accommodate any desired length of pintle spring by using bearing members cupped to the requisite depth, thereby permitting the use of one or two standardized end members which can be produced in large quantities in conjunction with the appropriately cupped bearing members to suit the particular requirements.

These and other features of this invention will be described in the following specification and will be defined in the claims annexed.

In the accompanying drawings I have illustrated one of the specific constructions embodying the principles of this invention which I have devised to meet the aforesaid requirements, in which:

Figure 1 shows an elevation of one of my improved spools, one end portion being shown in central section to illustrate the interior construction.

Figure 2 is an end view of the same.

Figure 3 shows, in separated relation, the various parts or members utilized in constructing the spool, some of said parts being slightly modified from the form shown in Figure 1.

Figure 4 is a view of the same parts shown in Figure 3 but turned at right angles to show them as each of them would appear when viewed in an axial direction.

Figure 5 is a cross sectional assembled view of the parts shown in Figure 3.

In general the spool comprises a longitudinal substantially cylindrical barrel 10, with end heads secured to each end thereof in the manner described to afford lateral support for the lengths of yarn coiled thereon.

Whether the barrel itself comprises a cylindrical tube 9, as shown in Figure 3, or be a composite structure embracing a wooden roller 8 with tubular ferrules 10 projecting beyond the ends to afford hollow ends for the barrel, is not material since this invention is applicable to either type of barrel. Where the wooden roller with projecting end ferrules, as shown in Figure 1, is used the end ferrules are driven tightly over the ends of the barrel, and retaining tongues 10^a are indented with a suitable punch to secure the ferrule against withdrawal.

The end heads 2 comprise a circular disk or body having peripheral outwardly turned flanges 2^a, and having also an inwardly turned flange 2^b, the interior edge portion of which, as shown at 2^c, is turned inwardly to form an inwardly turned stop lip or shoulder.

Against this shoulder is seated the inner bearing member 3 which, in Figure 1, is shown as a plane disk fitting into the interior of the flange and centrally perforated, as at 3^d, to afford a bearing support for the axial pintle 5, which forms the supporting journal of the end of the spool. This transverse disk or diaphragm 3 also receives the thrust of a helical compression spring 4, whose outer end thrusts against a shoulder or flange 5^a formed on the pintle 5.

To support the outer end of the pintle, a bearing member of hub-like construction 6, formed by the striking up of the metal disk,

is provided, the central or hub portion being in this case continued outward to form a disk-like body portion 6^a resting against the outside face of the end head 2 while the peripheral edge of the disk portion, as shown at 6^b, is turned outward to form a flange fitting inside the flange 2^a of the end head. This member may be held in place by spinning the edge of the flange 2^a inward to slightly overlap the edge of the flange 6^b.

The interior attaching flange 2^b of the end head may be secured to the surrounding hollow end portion of the barrel by spot-welding, brazing or equivalent means.

Both the inner diaphragm 3 and the outer diaphragm 6 form not only bearing members but also thrust-sustaining members since the inner bearing member receives the thrust of the compression spring 4 seated against it, while the outer member receives the thrust of the shouldered pintle 5, which is normally forced outwardly by the spring.

Precisely the same construction may be used where the barrel comprises simply a metallic tube 9, as shown in Figure 3, but in Figure 3 I have shown slight modifications of the different elements entering into the construction, which will now be described.

The body or disk-like diaphragm of the end head 2, in this case, is outwardly or reversely dished at 2^d, so as to project on the opposite side of the medial plane to the projection of the annular attaching flange 2^d. This construction allows the tubular end of the barrel to be forced somewhat beyond the inside face of the main body of the end head so that any crease or crack between the two parts lies beyond the plane of that inside face obviating any possibility of the yarn becoming caught in such crack.

To form an interlocking engagement between the barrel 9 and the attaching wing the hub portion or attaching flange 2^b of the end head is cut through or slotted, as shown at 2^e, the slot extending a slight distance through the flat body portion of the disk in order to form a keyway for the reception of the concavo-convex or trough-like rib 9^b, which serves the double purpose of forming an interlocking key in said notch or slot of the hub, and also of forming a trough for the reception of a clamping bar or rod for clamping the inner ends of the yarn supplied to the spool-barrel.

The disk or inner bearing member 3 is cut off at one side, as shown at 3^b, to allow it to be inserted without abutting against the end of said rib. The interior portion of this bearing member 3, as shown in Figure 3, is cupped or dished as at 3^a, in order to increase the axial spacing between its central bearing aperture and the center bearing aperture of the outer bearing member or hub 6.

It will be understood that any desired degree of dishing or cupping may be given either the inner bearing member or the outer bearing member or both in order to secure the desired spacing apart of the two bearing members which support the pintle. Such spacing also allows the use of any desired length of spring for normally pressing the bearing pintle outward to operative position.

The outer bearing member, adjacent to its hub portion, is provided with an aperture 6^c, through which the end of the clamping rod may be inserted since, as such yarn-clamping rods are commonly used in the art, provision is usually made in each form of barrel to receive such rod. This construction also makes it possible to draw or form the end head with any desired depth of attaching flange at a single operation.

What I claim is:

1. A yarn spool comprising a substantially cylindrical barrel, an end head having an interior annular flange fitting inside the hollow end portion of said barrel, separate inner and outer bearing members arranged in said end head in axially spaced relation, one of said members being interiorly cupped to increase the axial distance between the bearing members, a bearing pintle slidably supported in axial position by said spaced bearing members, and a spring arranged between the two bearing members acting to yieldingly force the pin to its outer position.

2. A yarn spool embracing in combination a substantially cylindrical barrel, an end head having an interior axially offset annular flange secured inside the hollow end of the barrel, a transverse bearing member seated inside said flange to sustain the inward thrust of a pintle-actuating spring, an outer bearing member projecting outside the plane of the end head, both bearing members being provided with aligned central bearing openings, a spring-pressed axially disposed pintle yieldingly mounted in said bearings, and a spring located between said heads to normally force the pintle outward to spool-supporting position.

3. A yarn spool embracing in construction, a barrel having a hollow end portion, an end head secured thereto, said end head comprising a pair of concavo-convex disks secured together with their concave faces toward each other, and provided with aligned axially spaced bearing apertures, an axially slidable bearing pintle mounted in said bearings said pintle having a stop member near its outer end to limit its outward movement, and a spring inserted between the two disks with its outer end exerting a yielding outward thrust against said pintle.

4. A yarn spool embracing in its construction a barrel having a hollow end portion, a transverse end head having a laterally off-

set annular flange arranged to telescope inside the hollow end of the barrel, said flange having an inwardly turned lip, a centrally perforated bearing disk seated against said lip to sustain inward thrust, an outer bearing member having a central bearing aperture located some distance outside of and in axial alignment with the aperture in said bearing disk, an axial bearing pintle projecting through both apertures, and a pintle-actuating spring compressed between said bearing disk and a shoulder on the pintle.

5. A yarn spool embracing a barrel, an end head secured thereto by an annular flange connection, inner and outer centrally perforated bearing disks one of them having its interior portion cupped away from the other to space their aligned apertures a substantial distance apart, an axially slidable pintle projecting through both apertures for support, and a helical spring normally but yieldingly pressing said pintle outward to form a bearing journal for the spool.

In witness whereof, I have subscribed the above specification.

CHARLES LEA.