R. H. BOWEN.

SPOOL.

APPLICATION FILED NOV. 13, 1914.

1,152,278. Patented Aug. 31, 1915.

FIG. I.

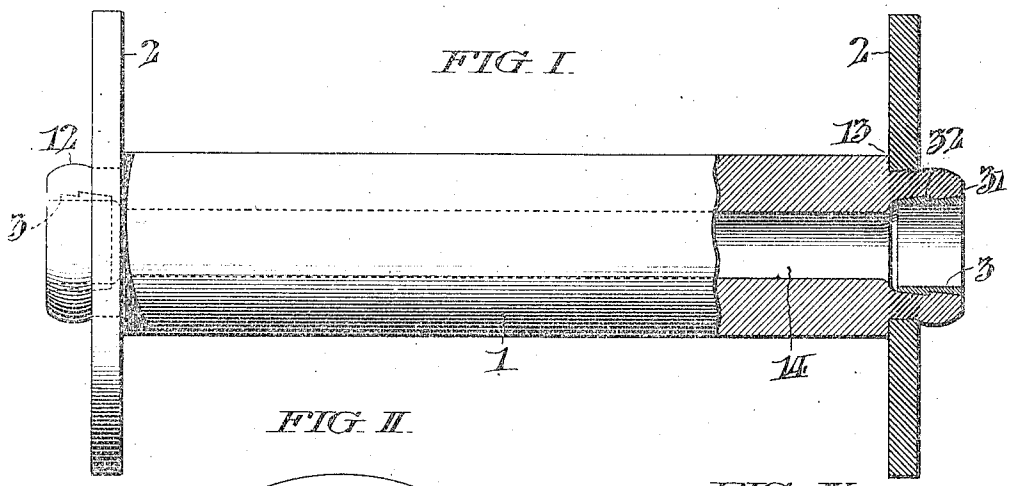


FIG. II.

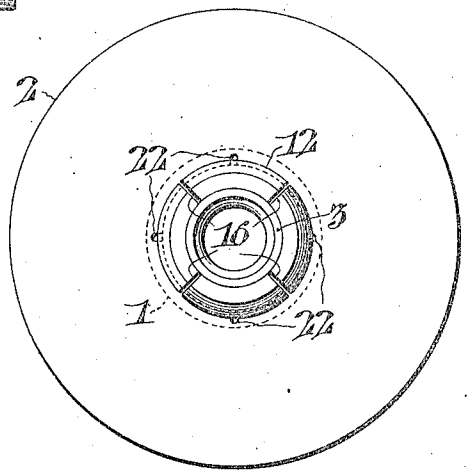


FIG. IV.

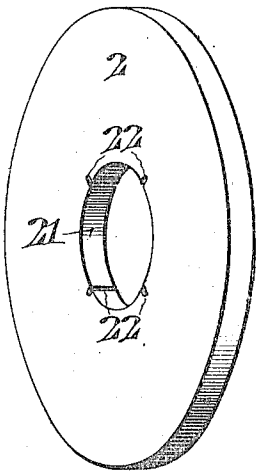


FIG. V.

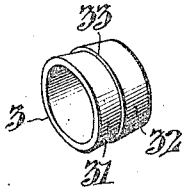


FIG. III.

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RUSSELL H. BOWEN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE AMERICAN PULLEY COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

SPOOL.

1,152,278. Specification of Letters Patent. Patented Aug. 31, 1915.

Application filed November 13, 1914. Serial No. 871,877.

To all whom it may concern:

Be it known that I, RUSSELL H. BOWEN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Spools, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to a spool comprising three essential elements, viz: a barrel with an axial hole, heads on the ends of the barrel, and internal bushings at the ends of the axial hole.

In the drawings, Figure I, represents a view, partly in side elevation and partly in axial longitudinal section, through a completed spool embodying my invention. Fig. II, is an end view thereof. Fig. III, is a detail view, partly in perspective and partly in axial section, of the barrel portion of the spool, showing its condition before assemblage of the parts. Fig. IV, is a view in perspective of one of the heads, and Fig. V, is a view in perspective of one of the bushings.

The structural characteristics of the three elements before assemblage will first be described, and their relations in the combined organization will then be set forth.

Referring to Fig. III, the barrel 1, is made of wood or similar compressible material. In external form it is cylindrical, as shown, having reduced end portions 12, forming abrupt shoulders 13. An axial hole 14, extends through the barrel, said hole having at its end regions, enlarged portions 15, corresponding substantially in axial extent with the reduced portions 12. Radial slots 16, are formed in the reduced end portions of the barrel, preferably located at quadrants, as shown. The heads 2, (see Fig. IV) are disks of "fiber," or similar rigid non-metallic material, having central holes 21, and are preferably also provided with short radial slots 22, arranged in quadrant relation. The thickness of the head is substantially less than the axial extent of the reduced extremity of the barrel, being preferably equal to about one-half the length of said reduced portion. The bushings 3 (see Fig. V) are tubular, and are formed of metal, the internal periphery being cylindrical, but the external periphery being in the form of two co-axial cone frusta, as shown at 31, 32, so as to present an abrupt annular shoulder, with a sharp edge, as indicated at 33. The profile of the longitudinal section may, therefore, be considered as ratchet shaped on the exterior.

As a typical instance of the relative dimensions of the parts, I would state that if it be assumed that the reduced ends 12, of the barrel have an external diameter of one and three-sixteenths inches ($1\frac{3}{16}$), the hole 21, in the fiber head should be about one and one-eighth inches ($1\frac{1}{8}$) in diameter. Assuming that the hole 15, at the end of the barrel was eleven-sixteenths ($\frac{11}{16}$) of an inch in diameter, the largest diameter of the bushing would be about three-quarters ($\frac{3}{4}$) of an inch. The parts thus made are assembled in the relation shown in Fig. I, by forcing the fiber heads 2, over the reduced portions 12, of the barrel, until said heads are seated firmly against the shoulder 13. The material of the reduced end portion 12, is compressed during the passage of the head and thereafter expands at the protruding region, leaving the region directly inclosed by the head still in compressive relation. The bushings 3, are then forced into the end openings 15, until the outer extremities of the bushings are substantially flush with the ends of the barrel, thus expanding the openings 15, and tending to enlarge the diameter of the protruding portions of the barrel, while increasing the compression at the region directly inclosed by the head. The slots 16, in the barrel ends facilitate both the forcing on of the heads and the forcing in of the bushings, and minimize the risk of splitting the wood of the barrel. The ratchet shaped profile of the bushings permits them to embed themselves in the wood so firmly as to prevent displacement. The slots 22 in the heads permit the wood to engage by expansion therein, and thus prevent the heads from turning.

When assembled in the manner described, the parts will present an organization substantially such as is shown in the sectioned portion of Fig. I, where it will be seen that the wood of the barrel, immediately inclosed by the periphery of the hole in the fiber head, is under permanent compression, as indicated by the heavy section lines at the right hand end of Fig. I. The protruding end portions of the barrel are relatively

expanded and the heads are firmly held in position against the shoulders 13. The degree of expansion, as well as the effect upon the end portion, due to the forcing on of the heads, is slightly exaggerated in Fig. I, in order to more clearly show the general nature of the resultant structure.

Having thus described my invention, I claim:

1. In a spool, the combination of a barrel of compressible material, such as wood, having externally reduced end portions terminating in abrupt shoulders, and having an axial hole; a head of rigid non-metallic material, such as "fiber", having a central hole of less initial diameter than the initial diameter of the reduced end portions of the barrel, the thickness of said head being substantially less than the length of the reduced portion of the barrel, said head being arranged in contact with said shoulder, and in compressive relation to the directly inclosed reduced end portion of the barrel, whereby a protrusion of the barrel to a substantial distance beyond the outer face of the head is afforded and an internal bushing having a ratchet shaped exterior profile, whose maximum diameter is in excess of the initial diameter of the end of the opening; said bushing being arranged in expansive relation to said end portion, both in the inclosed and protruding regions thereof.

2. In a spool, the combination of a barrel of compressible material, such as wood, having externally reduced end portions terminating in abrupt shoulders, provided with a longitudinal slot, and having an axial hole; a head of rigid non-metallic material, such as "fiber", having a central hole of less initial diameter than the initial diameter of the reduced end portions of the barrel, the thickness of said head being substantially less than the length of the reduced portion of the barrel, said head being arranged in contact with said shoulder, and in compressive relation to the directly inclosed reduced end portion of the barrel, whereby a protrusion of the barrel to a substantial distance beyond the outer face of the head is afforded, and an internal bushing having a ratchet shaped exterior profile, whose maximum diameter is in excess of the initial diameter of the end of the opening, said bushing being arranged in expansive relation to said end portion, both in the inclosed and protruding regions thereof.

3. In a spool, the combination of a barrel of compressible material, such as wood, having externally reduced end portions terminating in abrupt shoulders, provided with a longitudinal slot, and having an axial hole; a head of rigid non-metallic material, such as "fiber", having a central hole of less initial diameter than the initial diameter of the reduced end portions of the barrel, and a radial slot communicating with said hole, the thickness of said head being substantially less than the length of the reduced portion of the barrel, said head being arranged in contact with said shoulder, and in compressive relation to the directly inclosed reduced end portion of the barrel, whereby a protrusion of the barrel to a substantial distance beyond the outer face of the head is afforded, and an internal bushing having a ratchet shaped exterior profile, whose maximum diameter is in excess of the initial diameter of the end of the opening, said bushing being arranged in expansive relation to said end portion, both in the inclosed and protruding regions thereof.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this eleventh day of November, 1914.

RUSSELL H. BOWEN.

Witnesses:

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HORATIO N. W. DUNSEITH.