

April 25, 1944.

G. W. STEINHILBER

2,347,376

TEXTILE SPOOL

Filed Aug. 17, 1942

Fig. 1

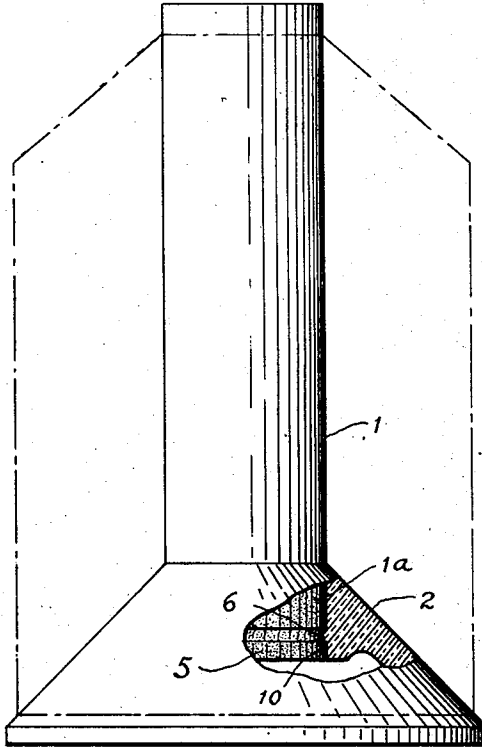


Fig. 2

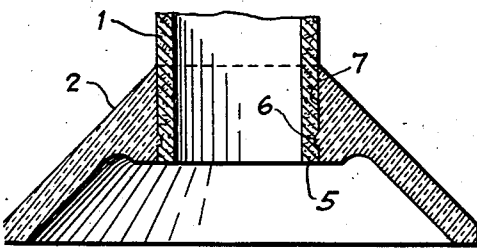


Fig. 3

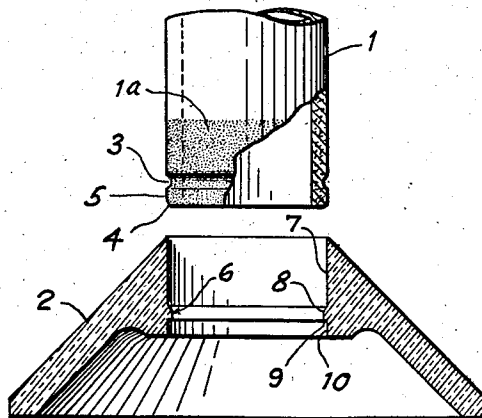
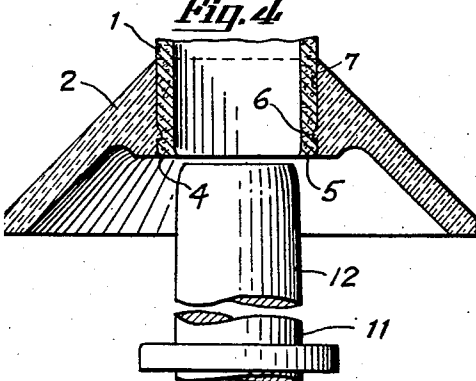


Fig. 4



INVENTOR
Gustav W. Steinhilber

BY

ATTORNEY

UNITED STATES PATENT OFFICE

2,347,376

TEXTILE SPOOL

Gustav W. Steinhilber, Manchester, Conn., assignor to Douglas C. Scott, West Hartford, Conn.

Application August 17, 1942, Serial No. 455,125

1 Claim. (Cl. 242—120)

My invention relates to textile spools.

It has among its objects to provide a textile spool of an improved construction which is especially adapted to use in connection with single headed spools, such as king spools, while also being adapted to use in double ended spools or bobbins. A further object of my invention is to provide an improved connecting structure for such spools of the type utilizing a tube, and, more particularly, to provide an improved connection between such a tube and the head or heads carried thereon, whereby these elements are securely connected in an improved and simplified manner making it unnecessary to provide the additional copper or brass internal clamping ring heretofore required. A still further object of my invention is to provide an improved annular groove and flange connecting structure between such a tube and its head whereby it is made possible to connect these elements in such manner as to hold the same securely against longitudinal separation or relative rotation and produce, in effect, an integral connection, while also producing a spool structure of such strength as to be well adapted to withstand the abuse to which such spools are subjected. Still another object of my invention is to provide such an improved spool which is adapted to be manufactured very inexpensively and quickly while requiring a minimum of inexpensive materials. These and other objects and advantages of my improvements will, however, hereinafter more fully appear.

In the accompanying drawing, I have shown for purposes of illustration one embodiment which my invention may assume in practice, the same being shown therein as applied to a king spool.

In this drawing:

Figure 1 is a side elevation of such a spool, a portion of the base being broken away to facilitate illustration and the thread wound on the spool being indicated by dotted lines to facilitate illustration;

Fig. 2 is a vertical section through the base and the adjacent portion of the tube, with the latter in operative position in the base;

Fig. 3 is a like view of the base but with the tube above the same in process of being inserted therein, a portion of the tube here also being shown in side elevation, and

Fig. 4 is a view similar to Fig. 2 but showing the parts in process of connection, with the tip of the mandrel shown below the same and about to enter the lower end of the tube.

In this illustrative construction, the king spool

comprises a tube 1 of paper board, vulcanized fibre or other suitable material having the desired resiliency, and a cooperating tapered base 2 of suitable plastic composition, wood, hard rubber, or other suitable material having the desired rigidity; both of these members herein being of an improved construction hereinafter described whereby they are securely connected together in an improved manner.

As shown, the tube 1 is provided closely adjacent its lower end with an external annular groove 3. Herein, this groove 3 is suitably pressed into its outer face, without deforming the inner face of the tube, and is semi-round in cross section. Also, the outer edge of the lower end of the tube is rounded as shown at 4 to facilitate its entry into the base 2 as hereinafter described. Thus, due to the material of the tube 1 and the above structure and the location of the groove 3 adjacent the end of the tube, a resilient end portion 5 is provided on the tube which, while it will yield to enable assembly in the base as hereinafter described, has very substantial strength.

The rigid base 2 also has an improved flange 6 adapted to cooperate with the resilient end of the tube and to be received in the groove 3 on the tube. As shown, this flange or rib 6 is also rigid and annular and extends inwardly from adjacent the bottom of an elongated vertical axial bore 7 of uniform cross section formed in the base 2. This flange 6 also has an upper rounded face 8 sloping downwardly and inwardly and terminating in an annular flat or abutment bottom surface 9. Beneath this flange 6 is also a short bottom bore 10 of the same diameter as the bore 7 and herein of the length of the portion 5. Thus, the bore 7 in the base 2 is adapted to receive therein a substantial length of the lower end of the tube 1 above the groove 3, while the flange 6 is adapted to be received in the groove 3, and the portion 5 of the tube in the bottom bore 10. The base 2 is of more rigid material than the tube and preferably has a conical wall forming a cone connected at its small end to the tube, the bore 7 being in a thickened portion of the wall and communicating with a flared mouthed portion, the bore being of substantial length but, on the other hand, taking up only a portion of the depth of the base or head.

Before assembling the tube 1, the lower end of the latter is first preferably suitably treated with cement or glue, as shown at 1a in Figure 3, in such manner as thereby to prevent relative rotation of the tube 1 and base 2, it being found

that the same may also be very effectively cemented in my improved construction. Preferably, the glue covers about $\frac{1}{2}$ of the length of the outer face thereof which is received in the combined bores 7 and 10. Care also is exercised to prevent applying any glue to the inside face of the tube.

After this treatment, the tube 1 is then disposed over the bore 7 as shown in Figure 3, and then forced down toward the position shown in Figure 4. During this operation, the rounded portion 4 and then the resilient portion 5 on the tube 1 move downward on the rounded face 8 on the rigid flange 6. Then, when resilient portion 5 on the tube has passed below the flange 6 and into the bore 10, the portion 5 will snap over the flange into the latter bore while the flange 6 is being snapped into the groove 3. Thus, it will be noted that the portion 5 is behind the abutment provided by the surface 9, while the flange 6 is in the groove 3, all in such manner as thereby effectually to prevent longitudinal separation in either direction.

With the parts in the relation shown in Figure 4, in order even further to fit the portion 5 behind the abutment 9 and in the bore 10, I preferably also then insert a mandrel 11 from below, as shown in that figure. The mandrel having a rounded and slightly tapered end 12 and acting on the inner wall of the portion 5, it will be apparent that the latter portion will thus be expanded in such manner as to bring the outer wall of the same into full contact with the wall of the bore 10 and thereby even more securely driving the portion 5 into interlocking relation with the flange 6. At the same time, the mandrel 11 insures the desired uniform inside dimensions of the tube 1 throughout its length.

As a result of my improved construction, and with the parts in the final assembled relation shown in Figure 2, it will be apparent that the tube 1 and base 2 are, in effect, integrally connected against both longitudinal separation and

relative rotation. Also, the tube 1 is seated in the base 2 to such a depth as obviously to prevent breakage, and the groove 3 and flange 6 connection, as well as the location of the portion 5 behind its abutment 9, all cooperate with the large glued area to increase the strength. Moreover, the construction is very inexpensive, thereby enabling the same to be used for king spools which are ordinarily thrown away after use. When desired, the adhesive may also be omitted.

While I have herein specifically described this form of my invention, it will be understood that this form of the same has been used for purposes of illustration, and that the invention may be modified and embodied in other forms without departing from its spirit or the scope of the appended claim.

What I claim as new and desire to secure by Letters Patent is:

A textile spool comprising two principal elements which are interlocked firmly without the aid of a third element such as a fastener, one of said elements being a tube of relatively light fibrous yielding material, the other element being a base or head of harder material than the tube and having a bore of appreciable length in which one end portion of the tube is received and held under compression, there being a locking means between the tube and base intermediate of the ends of said bore for holding the tube firmly in the base, said means being of a character to facilitate assembly by insertion of the tube into the base from that side of the latter which is innermost in the completed article, and said means comprising an annularly grooved portion on the external surface of the tube adjacent its extremity and a locking rib within the bore of the base sloped to facilitate the insertion of the tube into the base in the manner above mentioned and having a sharp locking edge which engages and locks in said grooved portion.

GUSTAV W. STEINHILBER.