Nov. 26, 1935. C. K. DUNLAP 2,021,992

SPOOL

Filed Nov. 19, 1934

FIG. 1.

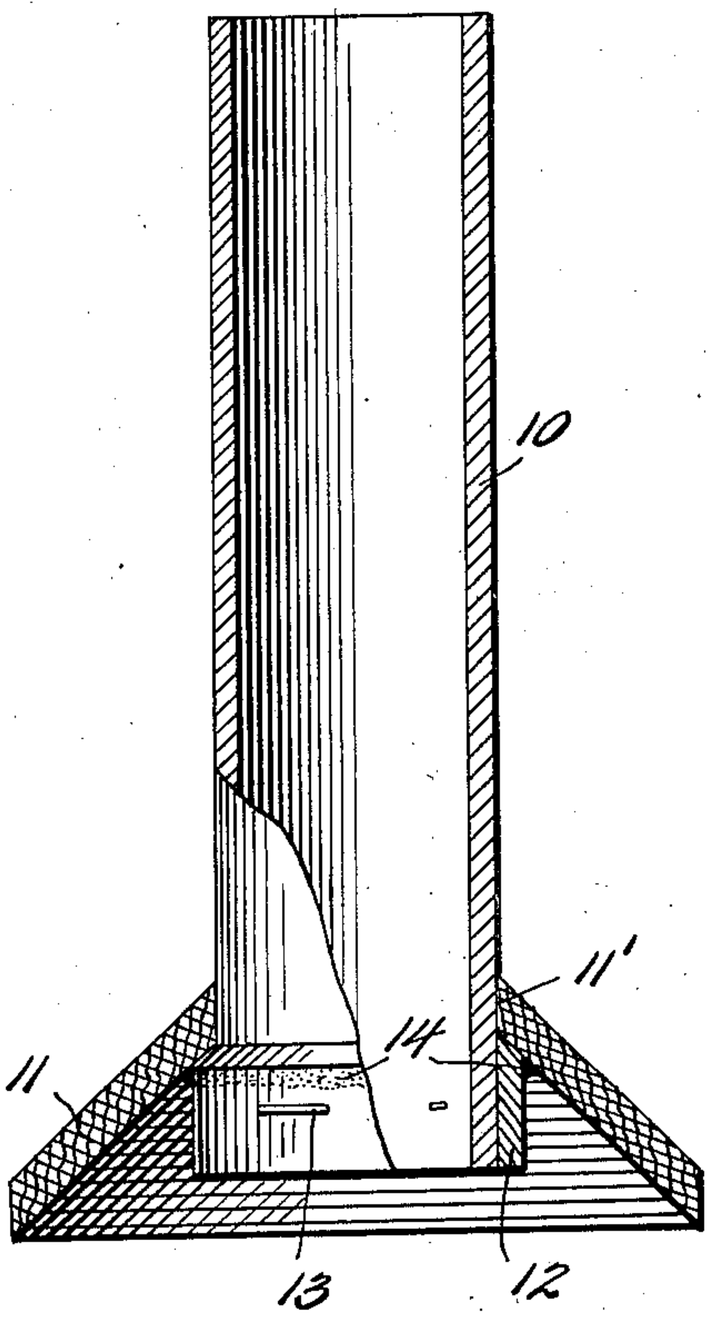


FIG. 2.

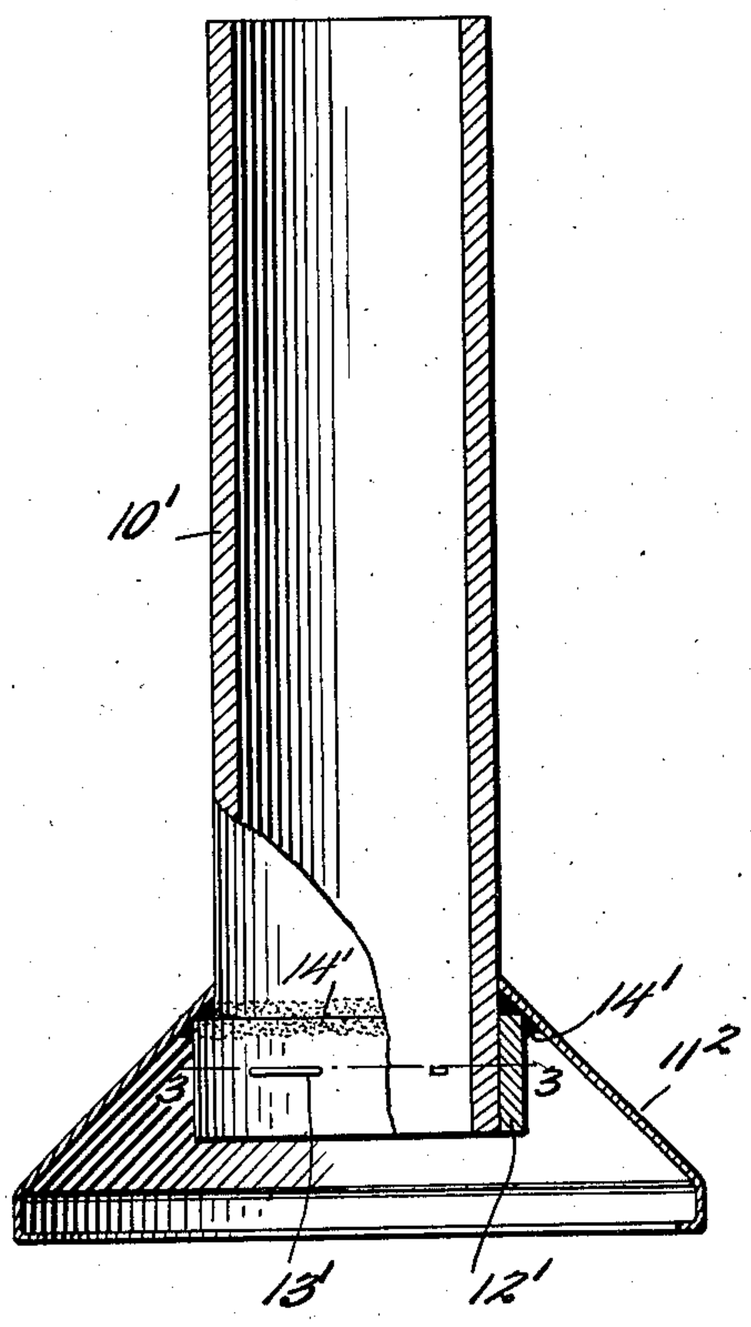
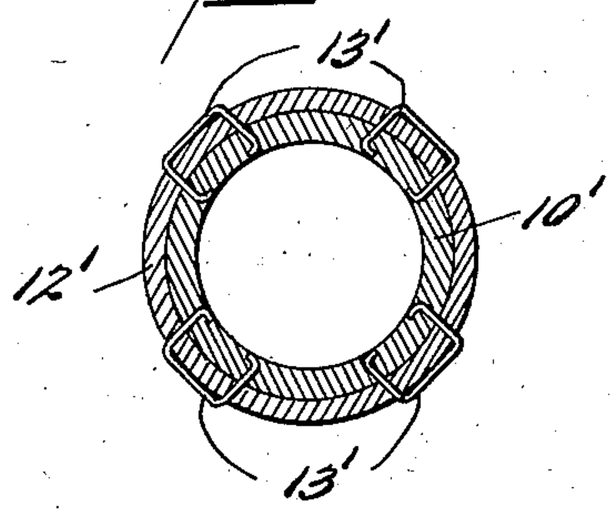


FIG. 3.



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SPOOL

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1 Claim. (Cl. 242—122)

The present invention relates to spools and particularly spools of the type used in large numbers in the textile industry as cores or supports for thread packages.

A spool constructed in accordance with the present invention may comprise a single ended spool, commonly known as a bobbin, or may be a double ended spool and it is the purpose of the invention to provide a spool end construction of novel character and readily applicable in the fabrication of spools of either type and by means of which a rugged and durable, simple, lightweight and economical spool may be readily fabricated.

The spool comprises two principal members, the tube and the base. The tube preferably comprises a cylindrical paper roll built up by winding a paper sheet upon a cylindrical mandrel and the base may comprise a frusto conical paper or metallic member arranged coaxially with the tube and secured thereto at one end. It is important that the base be so secured to the tube or barrel of the spool that it shall maintain its co-axial relationship with the barrel despite rough handling. It is likewise important to so secure the base upon the barrel, or the barrel within the base, that the base is unable to move axially of the barrel under the pressure of a thread winding disposed about the barrel. Likewise it is important to provide a spool which may be made at low cost and is as simple as may be.

It has heretofore been proposed that a spool of the general type just described may be fabricated by securing upon the barrel the frusto conical base and also providing means for connecting the outer periphery of the base to the end of the barrel, to brace the same and assist in maintaining the barrel and base in coaxial relationship. It has also been proposed that a frusto conical base may be provided with an elongated cylindrical flange which is adapted to engage the barrel over an extended area of the surface thereof. In the first instance, it is necessary to provide a barrel or tube which extends axially to the plane of the outer circular edge of the base. In the second instance, it is further necessary to provide a base of special character, having the cylindrical tube engaging flange previously mentioned. I have discovered that the complexities of these and all other forms of spools heretofore designed, may be avoided, and a spool produced having all the necessary qualities of durability, simplicity and economy. My improved spool includes simply a barrel, an abutment member on the barrel and its end, a frusto conical base encircling the barrel and closely engaging the abutment member, and a small quantity of strong adhesive for securing the base to the abutment member or to the abutment member and barrel, as may be desired. The spool constructed as above set forth will have a frusto conical base of simplest form, either of paper or metal or fiber, as desired, and without barrel engaging flanges. The tube or barrel will be shorter than a tube or barrel the end of which lies approximately in the plane of the outer circular edge of the base, thus effecting a saving of paper, and the abutment member secured upon the end of the tube is of the simplest nature, comprising merely a short cylindrical member encircling the tube end and secured thereto by an adhesive or by mechanical devices such as staples.

In the accompanying drawing two forms of the invention are illustrated.

Figure 1 is a view partially in axial section, and partially in elevation, of a spool having a frusto conical base of compressed paper;

Figure 2 is a similar view of a generally similar spool, the base portion here however being of sheet metal; and

Figure 3 is a section on line 3—3 of Figure 2.

Referring first to the form of the invention illustrated in Figure 1. Here the tube or barrel is indicated at 10 and is preferably of paper formed by winding a sheet upon a cylindrical mandrel and securing the several convolutions thereof together by a suitable adhesive. The base is indicated at 11 and comprises a frusto conical member, which in this case is formed of compressed paper, having an axial cylindrical aperture 11' the cylindrical wall of which fits closely against the cylindrical outer surface of barrel 10. The end of the tube terminates well above the plane of the lower circular outer edge of the base 11, and upon the end of the tube which lies within the base is mounted the abutment member 12, this member being rigidly attached to the tube as by means of an adhesive substance or mechanically secured thereto as by means of staples 13. The upper edge surface of the abutment member 12 is frusto conical and fits closely against the inner wall of the frusto conical base 11.

In assembling the spool, the abutment member 12 is first secured upon the end of the tube or barrel 10. A quantity of adhesive substance in liquid form is then placed upon the upper surface of the upper annular edge surface of the abutment member 12, or upon the inner surface

of the base 11 toward the upper end thereof, and the base is then placed over the tube and moved to the position as shown, the upper edge of the abutment member 12 being tightly engaged by the base. It is maintained in this position, with tube 10 and base 11 in coaxial relationship, until the adhesive substance, indicated at 14, hardens. When the adhesive has hardened or set the spool is ready for use and, despite the simplicity and absence of bracing members between the tube and the outer end of the base, it is found that the spool is very durable in use and adapted to readily perform all of the functions which it is called upon to perform.

If the spool is to be a double ended spool additional base and abutment members are applied to the opposite end of tube 10 in the same manner although, in this case, it is clear that the base must first be applied and finally the abutment member and the adhesive.

In the form of the invention shown in Figure 2 the upper edge surface of the abutment member 12′ lies in a plane transverse to the axis of the spool so that the upper outer annular edge or corner of this member alone comes in contact with the inner surface of the frusto conical sheet metal member 11^2. Abutment member 12′ is secured to tube 10′ by staples 13′ or a suitable adhesive, and the base member 11^2 is secured to the abutment member and tube member by a suitable adhesive 14′.

In either case, and after the adhesive has hardened, the spool is ready for use and by actual test is found to have all the necessary attributes of strength and durability while at the same time having the desired characteristics of low cost, simplicity, and ease of manufacture.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

A spool for use as a core for a thread package in the textile industry comprising a cylindrical tube or barrel and a hollow frusto conical base having a central circular aperture at its small end through which the tube extends, the annular edge of the base which defines said aperture fitting closely against the surface of the tube and the circular edge of the base at its larger end comprising a support engaging edge, the tube and base being coaxial and one end of the tube lying within the base and intermediate the inner surface thereof and the plane of said edge, a cylindrical abutment member encircling the last mentioned end of the tube and being rigidly secured thereto, one end of said member being in contact with the inner surface of said base adjacent the central aperture, and adhesive material distributed around the end of said member which contacts with the base, such adhesive material comprising the sole means for securing the base to the abutment member.

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