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3,207,394

THREAD PACKAGE

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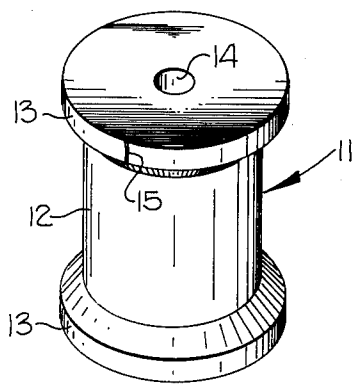


Fig-1

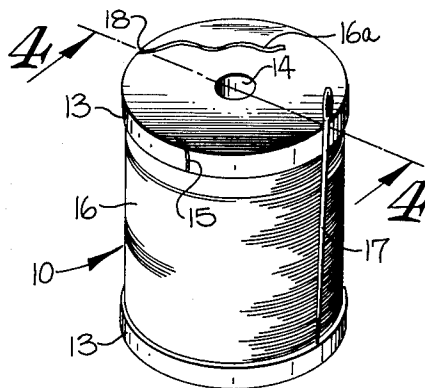


Fig-3

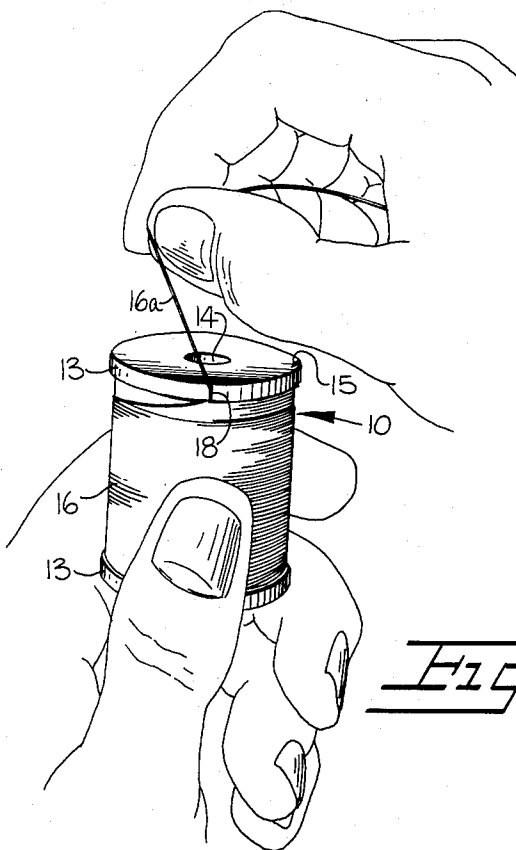


Fig-2

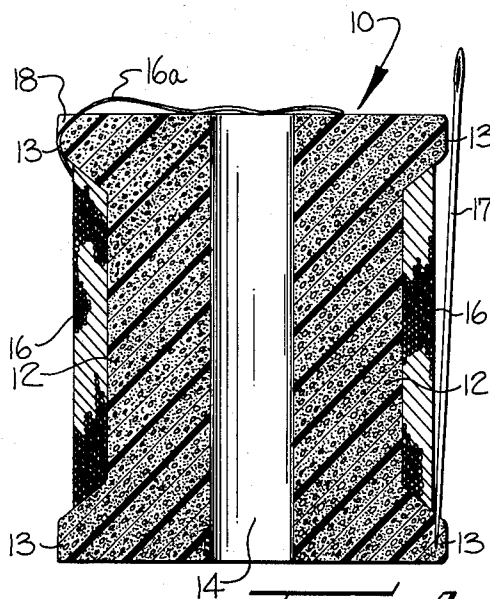


Fig-4

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3,207,394

THREAD PACKAGE

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2 Claims. (Cl. 223-109)

The present invention relates to a thread package, and more particularly to a package including a spool or reel having thread, line or the like wound thereon. This application is a continuation-in-part of application Serial No. 243,355, led December 10, 1962, and now abandoned.

Conventionally, thread packages include a spool on which the thread is wound, which spool is usually formed of wood by a turning operation to form a cylindrical barrel having annular flanges of opposite ends thereon. A central opening is then drilled axially of the barrel and flanges. It can readily be appreciated that such multiple operations are time consuming and expensive. Also, such wooden spools are relatively heavy as compared to the weight of the thread wound thereon and are usually manufactured at a considerable distance from the thread manufacturing plant and then shipped to the thread manufacturing plant for winding of the thread thereon to complete the thread package. Such shipping of the empty spools is quite expensive as is the shipping of the thread packages using these relatively heavy wooden spools since freight rates are quite high.

In addition, wooden spools of this type are manufactured from various types of wood having varying degrees of porosity. These varying degrees of porosity afford problems in securing labels to the ends of spools since the labeling machines normally are set up to supply a predetermined amount of adhesive to the labels prior to applying the same to the ends of the spools. This predetermined amount of adhesive is frequently insufficient to maintain the labels on spools of these varying degrees of porosity in a flat, unwrinkled condition. A flat, unwrinkled label is important not only from an appearance standpoint, but also since wrinkled labels sometimes become detached from the spool.

Still further, it is common practice during the winding of the thread on the spool to cut a thread-holding notch in one of the flanges of said spools into which the free end of the thread is inserted after the desired amount of thread has been wound on the spool to prevent the thread from unwinding from the spool. This notch is normally cut in the flange at an acute angle to the radius of the spool and frequently the portion of the spool between such thread-holding notch and the periphery of the flange becomes broken thereby releasing the thread and rendering the thread package unacceptable. This thread-holding notch is the only means provided on conventional spools for holding the free end portion of the thread to prevent unwinding of the thread from a partially depleted thread package. It is therefore necessary for the seamstress to locate the notch on the flange and to insert the free end portion of the thread therein. The location of the notch and insertion of the thread therein frequently takes considerable time and manipulation of the spool since only one notch is formed in only one flange of the spool. It can be readily appreciated that if the portion of the flange between the notch and the periphery of the flange has been broken away as stated above, there is no means on the spool for securing the free end portion of the thread and the thread may unwind from the spool and become entangled or broken.

In addition, it is common in the use of such thread packages for the user, such as a seamstress, to wish to

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maintain a particular needle with a particular thread package. Heretofore, no spool has been provided wherein the material of the spool permits ready penetration of a needle or pin therein such that the spool serves as a combination pin cushion and thread holder. It has been common practice therefore to maintain a needle with a thread package by inserting the needle under several wraps or courses of the outer layer or layers of thread remaining on the spool. Such insertion of the needle, however, frequently results in rupturing or fraying of the thread.

While it is recognized that the prior art is replete with a variety of thread spool attachments or specially constructed spools for readily securing the free end portion of the thread against unwinding and for holding a needle in association with the spool, none of these attachments or specially constructed spools have proven to be acceptable solutions to the problem due to increased costs thereof.

It is, therefore, an object of the present invention to provide a thread package incorporating a novel spool obviating the aforementioned deficiencies of conventional spools, which spool serves as a combination pin and needle cushion and thread holder and wherein the free end portion of the thread or line may be releasably secured at any desired point around the flanges thereof.

A more specific object is to provide a novel spool for a thread package which is lightweight, may be formed in a molding operation, will serve as a combination pin cushion and thread holder and wherein the free end portion of thread or line adapted to be wound thereon may be releasably secured at any desired point around the flanges thereof by forcibly moving the thread or line thereagainst to cause penetration of the flange material.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which—

FIGURE 1 is a perspective view of a spool constructed according to the present invention;

FIGURE 2 is a perspective view illustrating the notching of one of the flanges of the spool by thread forcibly drawn thereacross;

FIGURE 3 is a perspective view of the spool shown in FIGURE 2 and showing a needle disposed with the point penetrating into the lower flange thereof; and

FIGURE 4 is an enlarged vertical section taken substantially along line 4—4 in FIGURE 3.

Referring now to the drawings, there is shown a thread package generally indicated at 10 which incorporates the features of the present invention. It is noted that while the thread package 10 is shown and described as a sewing thread package, the same may be a package of any suitable strand material such as string, yarn, line, such as fishing line, and the like without departing from the scope of the present invention. Therefore, the term "thread" as used herein is intended to include all such strand materials. Thread package 10 includes a spool or reel 11 (FIGURE 1) including a preferably cylindrical barrel portion 12 and preferably annular flange portions 13 formed integrally with opposite ends of the barrel portion 12. Barrel 12 and flanges 13 have an opening 14 extending axially or longitudinally therethrough and a thread securing notch 15 is formed in one of the flanges 13 usually at the end of the winding operation which places a thread 16 on spool 11.

Thread 16 is wound on the barrel 12 between flanges 13 in spiral wraps or courses to define a plurality of superposed layers of thread with the outermost layer being disposed inwardly of the periphery of flanges 13 such that the flanges maintain the thread on barrel 12. Thread 16 terminates in a free end portion 16a which is normally inserted into thread securing notch 15 at the end of the

winding operation which places thread 16 on spool 11 but which is shown herein as having been removed and used to form another notch in a manner to be described later. This completes the thread package 10 and the same is then ready for subsequent labeling, packaging and/or sale.

Spool 11 is constructed of a cellular plastic material which is molded into the desired shape in a preferably single step molding operation using a heated mold which forms a smooth surfaced, very thin shell on the exterior surface of the spool. The cellular plastic material in spool 11 is of a density within the range of 4 to 13 pounds per cubic foot, since it has been determined from tests that spools having a density falling below this range are normally too soft to maintain their shape under normal usage and are too easily fractured. Also, tests show that spools having a density outside this range do not provide the desired notching characteristics by a thread drawn forcibly thereacross because a density below this range is too soft and the material is merely compressed and not notched and a density above this range is too hard and the thread may not penetrate therein. Also, from test spools formed to date, it has been determined that spools formed of cellular plastic material of a density of about 6 to 11 pounds per cubic foot have provided the best shape retaining characteristics while still being economically feasible and also providing the best thread notching characteristics. Of the various cellular plastic materials, expanded polystyrene material is preferred since the same has proved to impart the desired characteristics to the spool 11 while having very desirable economic factors. While barrel 12 and flanges 13 are shown as being formed integrally, which construction is preferred, it is apparent that the same could be formed separately and subsequently secured together by any suitable means, such as adhesive. Also, it is preferred that all of the spool 11 be formed of the cellular plastic material, but it is apparent that barrel 12 could be formed of other suitable material with flanges 13 being molded of the cellular plastic material.

In some instances where all of the spool 11 is formed of the cellular plastic material, it may be desirable to have the flange 13 of a greater density than the barrel portion 12 since the flanges 13 are the portions of the spool normally exposed. In this regard, thread 16 normally covers the barrel portion 12 thereby affording some protection thereto and therefore flanges 13 are most susceptible to deformation and fracturing in normal usage of spool 11.

It is noted that the cellular plastic material of the aforementioned density permits ready penetration of a pointed object, such as a needle 17, pin and the like thereinto, as shown in FIGURES 3 and 4, such that spool 11 serves as a combination pin cushion and thread holder for ready penetration of a fishhook in the case of a fishline package. It is also noted that the cellular plastic material is highly buoyant and readily floats in water which also makes the same highly desirable for fishline packages.

Further, the cellular plastic material of the aforementioned density permits ready displacement or notching of the material of flanges 13 by thread forcibly moved there-

against or drawn thereacross as indicated at 18 in FIGURES 2-4 to at least partially embed the thread therein. This feature permits the free end portion 16a of thread 16 to be releasably secured to flanges 13 at any desired point around either of the flanges 13 merely by the user forcibly moving the thread against the flanges 13.

It will therefore be apparent that a novel thread package is provided wherein a novel spool is incorporated which serves as a combination pin and needle cushion and/or thread holder and wherein the free end portion of the thread may be releasably secured at any point around the flanges of the spool by merely forcibly moving the thread thereagainst to cause at least partial penetration of thread into the flange material.

In the drawings and specification there has been set forth a preferred embodiment of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. A thread package comprising a spool including a barrel and annular flanges at opposite ends of said barrel, and a plurality of superposed layers of thread surrounding said barrel between said flanges and terminating in a free end portion, one of said flanges having a notch therein in which said free end portion of said thread is releasably secured, at least the flanges of said spool being formed of an expanded cellular plastic material of a density within a range of 4 to 13 pounds per cubic foot, said spool being characterized by the flanges thereof being readily penetrable by a pointed object such as a needle, pin and the like whereby said thread package also serves as a needle and pin cushion, and said spool being further characterized by the flanges thereof being readily notchable by a thread forcibly drawn thereacross to at least partially embed the thread therein for releasably securing the free end portion of said thread at any desired point thereon.

2. A thread package according to claim 1 wherein said flanges and said barrel of said spool are integrally formed of expanded cellular polystyrene material of a density within a range of 6 to 11 pounds per cubic foot.

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JORDAN FRANKLIN, *Primary Examiner*.