May 31, 1960 H. McDONALD. BROWNING ET AL 2,938,625

CARTON FOR WOUND YARN

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FIG. I

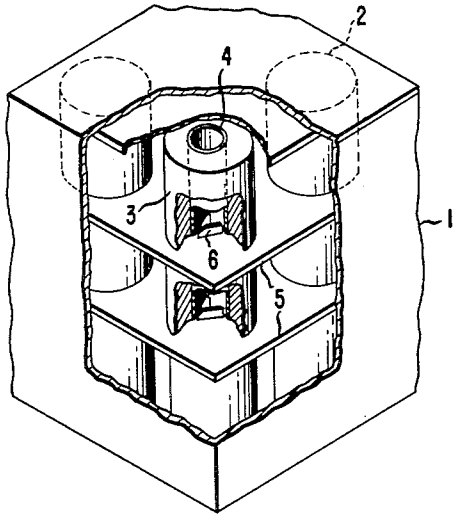


FIG. III

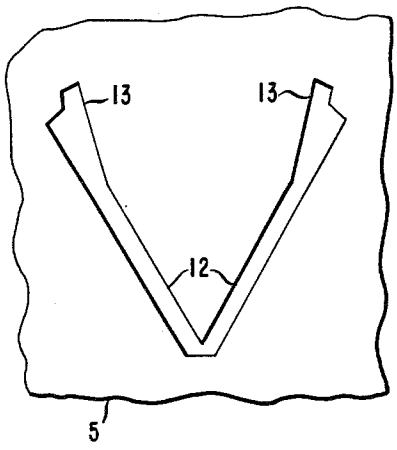


FIG. II

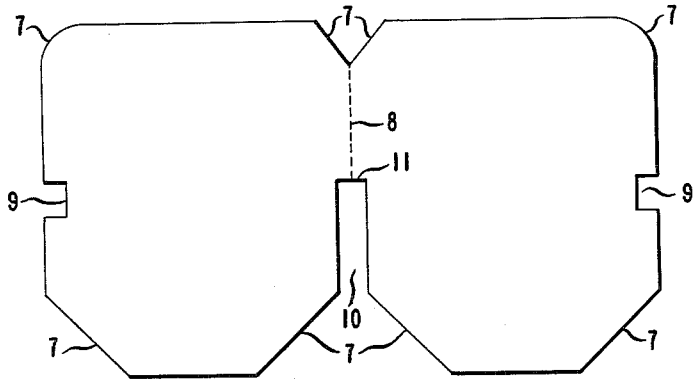
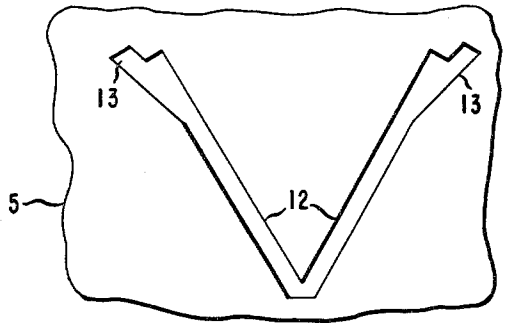


FIG. IV



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FIG. V

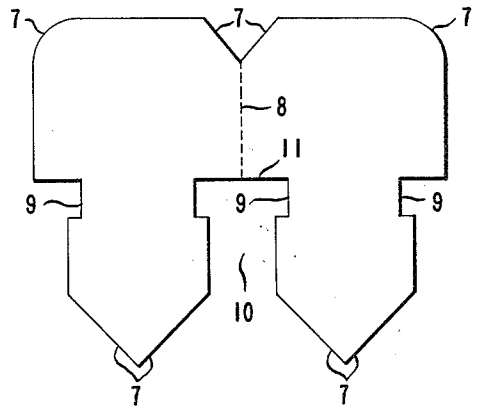


FIG. VI

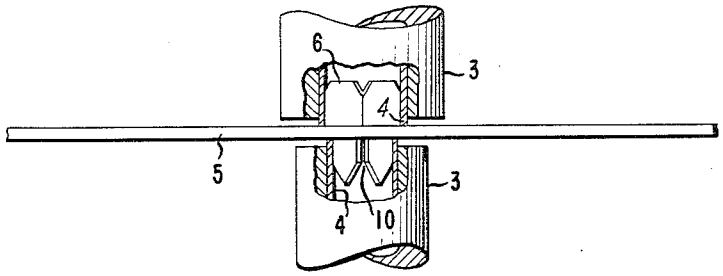
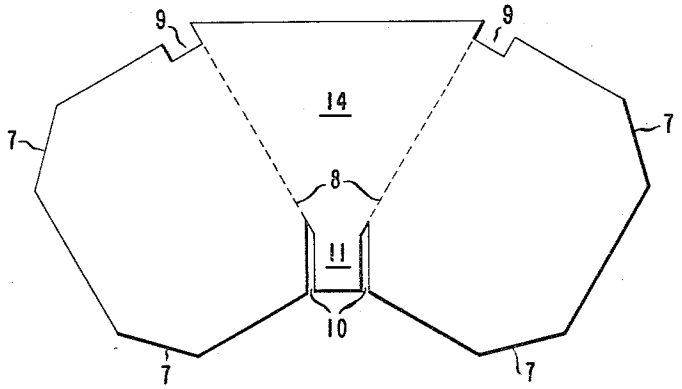


FIG. VII



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United States Patent Office 2,938,625 Patented May 31, 1960

2,938,625

CARTON FOR WOUND YARN

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Filed Apr. 16, 1959, Ser. No. 806,950

5 Claims. (Cl. 206—65)

This invention relates to a new and useful shipping container for wound yarn and the like. More particularly it is concerned with a protective package for transporting a tube of wound yarn or the like.

In the textile trade much continuous filament yarn is shipped in the form of a tube. i.e., a cylindrical package of yarn wound on a hollow cylindrical core. The core projections from the yarn body serve to protect the yarn winding shoulders from abrasion by supporting surfaces. The protection of the yarn winding shoulders is very important since, while an abraded yarn along the yarn winding edge can be removed by stripping off a relatively short length of yarn before the yarn package is mounted for twisting, weaving or the like, a defect in the yarn which appears along the shoulder cannot be so removed. Since the slightest defect in the yarn creates a visible defect in the finished fabric, the trade rejects yarn packages in which shoulder defects are detected. For this reason it is essential that both the upper and lower yarn winding shoulder be protected from rubbing, snagging and the like at all times.

The yarn as it is shipped from the manufacturer is usually very fragile, due to fine denier, lack of twist, absence of size and the like. In view of its fragile nature, special precautions must be taken to avoid injury to the yarn while it is being unwound. Since the package is designed for over end take off, any possible point of abrasion must be avoided along the package edge. For this reason, knots which may occur to join ends of yarn are laid across the upper yarn winding shoulder where they are plainly visible and where they will not rub yarn removed ahead of them. Care must also be taken to avoid nicks, abrasions and the like to the outer surface of the upper core projection against which the yarn relatively near the core drags on take-off. It is therefore important that contact of any packaging with this surface be avoided to prevent the surface from being scuffed.

An object of the present invention is to provide a novel and useful package for protection of round tubes of yarn and the like during transportation.

Another object is to provide a novel and useful combination comprising an outer wrapper and position locking means for a tube of textile yarn or the like wherein the yarn, during transport, is supported solely by its core.

These and other objects will become apparent in the following description and claims.

The invention will be more readily understood by reference to the drawings.

Figure I is a perspective view of an embodiment of the combination of the present invention.

Figure II is a blank having a resilient fitting foldable into a V-shape and of such dimensions to be capable of insertion within the core projection of a wound tube of yarn.

Figure III is a fragmentary view of a pad containing

a V-shaped aperture with an inwardly directed loading slot at the extremity of each of its arms, the said aperture being of such dimensions to receive and retain the resilient fitting referred to in Figure II.

Figure IV is a fragmentary view of a pad containing a V-shaped aperture similar to that of Figure III with an outwardly directed loading slot.

Figure V is a blank for a resilient fitting similar to that of Figure II but providing for the gripping of yarn cores of different sizes on each side of the pad when the said fitting is received into the pad aperture.

Figure VI is a side view of a pad into which a fitting of Figure V has been locked and upon each surface of which the core of wound yarn is gripped by the said fitting.

Figure VII is the blank of a fitting foldable to a V-shape wherein the extensions forming the V are connected by a flat surface or web so that when inserted in the V-shaped aperture of the pad, protrusion of the fittings occurs at only one surface of the said pad.

Referring to the drawings, Figure I shows an outer wrapper 1 providing lateral protection of yarn packages 2, the said packages comprising a body of wound yarn 3 disposed on a core 4 which core projects above and below the shoulder of the yarn body. As shown in the figure, tiers of yarn packages are disposed between separating pads 5 from which a V-shaped fitting 6 protrudes to grip the inner periphery of core 4, the said fitting preventing lateral displacement of the said yarn package.

Figure II illustrates a blank foldable into fitting 6. As can be seen from the drawing, this blank is essentially two rectangular and similarly shaped members having beveled corners 7, symmetrically disposed on prescored line 8 for folding, a keying slot 9 along the edge of each of the rectangular members opposite the prescored line and a ledge forming recess 10 parallel to and symmetrical with prescored line 8 extending from the outer edge of the blank through the depth of keying slot 9, thereby forming a ledge 11 when the rectangular members are folded along line 8 until the edges of recess 10 are in mutual contact.

Figures III and IV are fragmentary views of separating pads 5 illustrating two embodiments of the V-shaped receiving aperture 12. V-shaped fitting 6 (Figure II) is loaded into receiving aperture 12 by folding the fitting along prescored line 8 until the edges of recess 10 are in mutual contact as described above, placing the lower edge (i.e., that edge at which recess 10 terminates) into receiving aperture 12, bending within their elastic limits those edges of fittings 6 opposite to prescored line 8 to permit their passage within loading slots 13 which are located at the extremity of each arm of receiving aperture 12 adjacent to, and at a slight angle to the edge of the said V. When fitting 6 has been inserted to that depth wherein keying slot 9 is opposite separating pad 5 the edges are released and fitting 6 is secured from withdrawal and insertion motion at each extremity of the V of receiving aperture 12 as well as secured from further insertion motion at its apex. As will be seen by a comparison of receiving aperture 12 in Figures III and IV, loading slot 13 may angle toward or away from the acute angle formed upon folding fitting 6 into its V shape. When fitting 6 is disposed and locked in receiving aperture 12 it projects from each surface of pad 5 in the form of a V upon which the cores of wound yarn bodies may be slideably mounted by insertion of the said fitting within the said core.

Figure V is another embodiment showing the blank of a fitting suitable for mounting cores of different diameters on opposite surfaces of a separating pad. In this embodiment a keying slot 9 is provided both at the

edges opposite the prescored line and along the edges of recess **10** immediately below ledge **11**.

Figure VI is a side view of the fitting **6** shown in Figure V disposed in a separating pad **5**, the fitting having mounted on opposite surfaces of pad **5** yarn bodies **3** mounted on cores **4** of different diameter. As shown in the illustration, it is not essential that the edges of recess **10** be in mutual contact when fitting **6** is locked in its aperture.

Figure VII is another embodiment of a suitable fitting wherein a triangular web **14** is disposed between each of the symmetrical rectangular members which members have beveled corners **7**, the rectangular members being disposed along the edges of triangular web **14** at prescored lines **8** so that when folded along the lines to the extent of mutual contact of the edges of recess **10** a V-shaped fitting is formed suitable for insertion as previously described in receiving aperture **12**, the said fitting being locked by keying slots **9** to the separating pad. In this embodiment fitting **6** protrudes from only one surface of the separating pad, triangular web **14** lying flush against the opposite surface of the said pad.

The resilient fitting and separating pad are preferably constructed of corrugated board of multi-walled construction, although plastic or other low cost materials having similar characteristics of bursting strength, rigidity and density may be utilized. The inserts and pads may be die-cut or fabricated by any conventional methods. The beveled corners of the resilient fitting are not a necessary feature of the invention although they are preferred since such construction facilitates insertion of the fitting in the pad aperture as well as placement of the yarn core on the fitting.

The angle of the aperture may vary from about 5° to about 90°, but for optimum rigidity of the supporting insert, is preferably from about 50° to about 70°. In the preferred embodiment, and as shown in the illustrations, the V-shaped apertures of the separating pads are flattened at their outer apex, thereby increasing the area of contact between the ledge of the resilient fitting and the separating pad. The slight angle of the loading slot from the arms of the receiving aperture may vary from about 2° to about 80° but is preferably from about 5° to about 10°.

The V-shaped fittings are inexpensively fabricated, easily installed, and efficient in forming strong, vertical posts around which the tops and bottoms of hollow cores can be seated. The combination of the fittings and separating pads prevent abrasive contact of the yarn body with any other material. Furthermore, there is no contacting surface to roughen the outer edge of the core extension. The structure permits packaging of each yarn body individually, of multiple yarn bodies side by side or vertically or a multiplicity of yarn bodies may be packaged in tiers as illustrated. The nature of the outer wrapper is not critical and may be paper, cardboard, cloth, plastic or the like.

While the invention has been particularly illustrated by reference to yarn bodies wound on cylindrical cores, the combination of resilient fittings locked in separating pads may be employed to anchor other types of structures such as yarn bodies mounted on cones, yarn bodies mounted on spools, bodies of ribbon tape and sheet materials mounted on hollow core structures and the like.

Many other modifications will be apparent to those skilled in the art from a reading of the above without a departure from the inventive concept.

What is claimed is:

1. A retaining device for a body mounted on a hollow core comprising a carton, a body mounted on a hollow core in said carton, parallel pads abutting each core and normal to the longitudinal axis of the said core, a V-shaped aperture in each pad opposite each core, the said aperture being of such dimension and so positioned that all parts of the said V are within the inside periphery of the said core projection, a loading slot at the extremity of each arm adjacent to and at a slight angle to the edge of the said V, a resilient fitting comprising a unitary member received in the aperture to form a V-shaped protrusion from a surface of the said pads, the said protrusion engaging the inner periphery of the said core, the length of the arms of the V of the said fitting being greater than the length of the arms of the V of the said aperture but less than the sum of the length of the arms of the aperture and the extension thereof formed by the loading slot, the said fitting being resiliently held away from that edge of the said V aperture to which the loading slot abuts, a slot in the edge of the said fitting along its area of contact with the said pad providing keying of the said fitting to the said pad, and an outer wrapper preventing relative motion among the said pads.

2. The device of claim 1 wherein a multiplicity of bodies mounted on hollow cores are retained within the said outer wrapper.

3. The device of claim 2 wherein a V-shaped fitting protrudes from each surface of at least one of the said pads, each such protrusion fitting within the inside periphery of a core projection.

4. The device of claim 3 wherein the said body is a yarn body.

5. The device of claim 1 wherein the arms of the V-shaped aperture form an angle of from 50° to 70°.

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