

March 3, 1959

W. BREUER
POSITIVE LOCKING TUBE CARTON

2,875,892

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2 Sheets-Sheet 1

Fig. 1

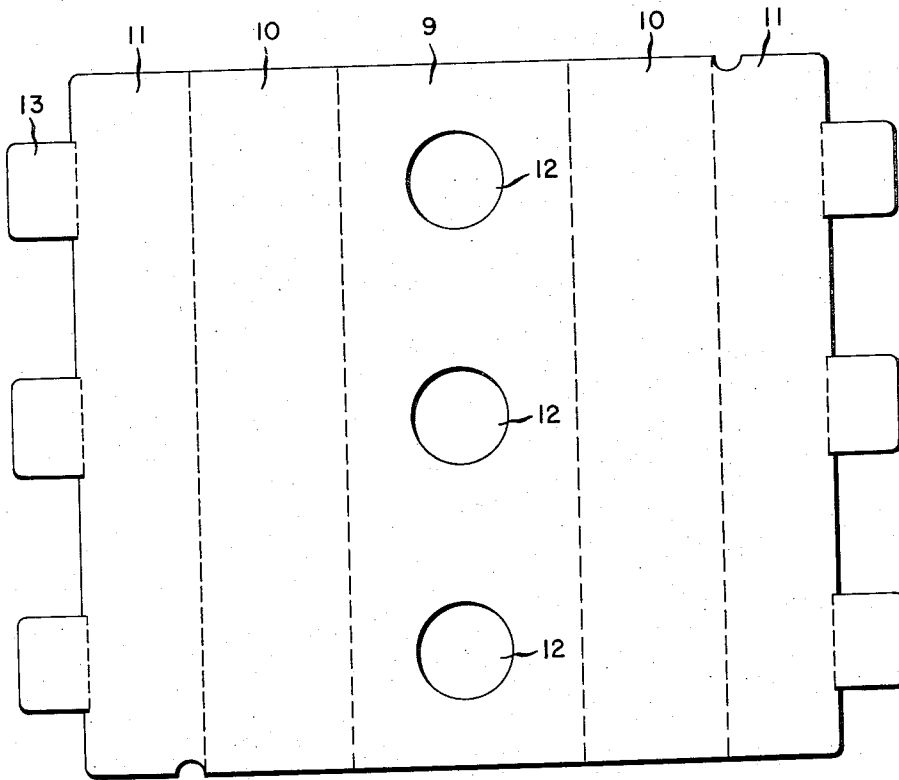


Fig. 6

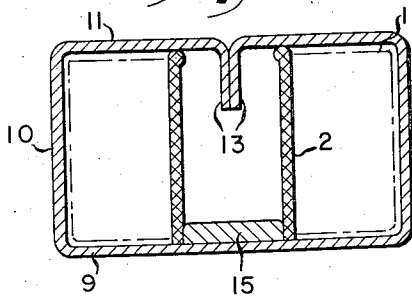
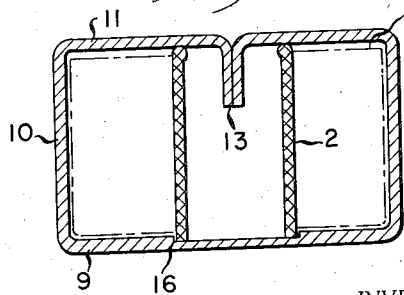


Fig. 7



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2 Sheets-Sheet 2

Fig. 2

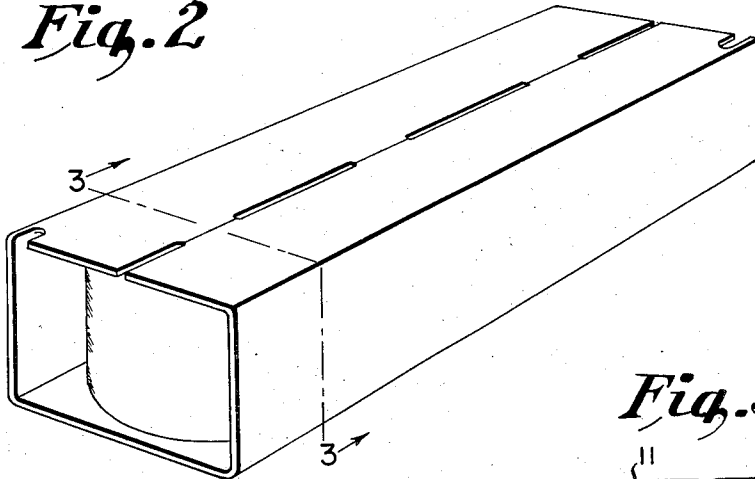


Fig. 3

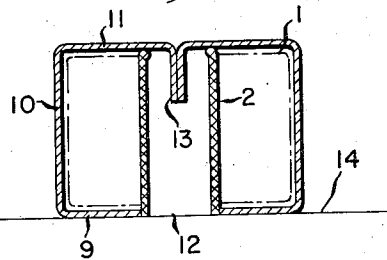


Fig. 4

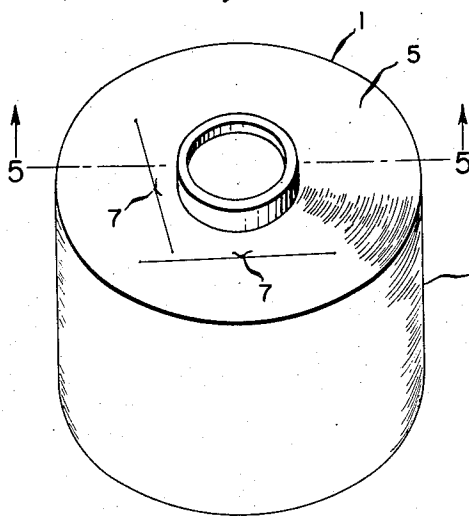
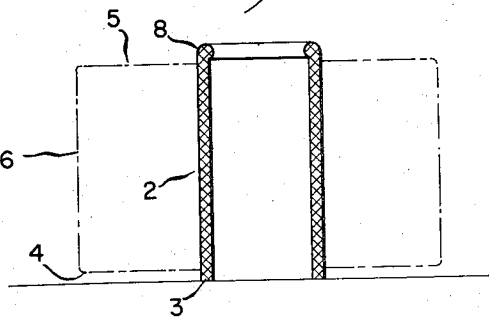


Fig. 5



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1

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POSITIVE LOCKING TUBE CARTON

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2 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 wrapper or folder for transporting a tube of wound yarn or the like.

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

Another object is to provide a novel and useful tubular, open-end interlock comprising a wrapper and 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 1 is a plan view of a wrapper blank.

Figure 2 is a perspective view of a three-tube, tubular interlock.

Figure 3 is a sectional elevation of a tubular interlock taken along lines 3—3 of Figure 2, the interlock resting on a supporting surface.

Figure 4 is a perspective view of a tube of textile yarn.

Figure 5 is a sectional elevation of a tube of textile yarn taken along lines 5—5 of Figure 4.

Figures 6 and 7 are sectional elevations of tubular interlocks illustrating various core base-anchoring means.

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. Such a yarn package is shown in Figures 4 and 5. As can be seen in these illustrations the yarn 1, is wound on core 2, the core projecting from both the under and over ends of the yarn winding. The edge of the under core projection 3 serves to support the yarn package during storage. As is apparent from Figure 5, when resting on a surface, the under core projections serves to raise the lower yarn winding shoulder 4 above the supporting surface. The protection of the lower yarn winding shoulder 4 and the upper yarn winding shoulder 5 is very important. As will be apparent, an abraded yarn along the yarn winding edge 6 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 finish 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, 4 and 5 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 6. For this reason, knots 7, which may appear to join ends of yarn,

2

are laid across the upper yarn winding shoulder 5 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 upper core projection 8 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.

A wrapper blank for folding around a tube of yarn to form an interlock therewith is shown in Figure 1. This wrapper, preferably cut from corrugated paper-board, is scored along the dotted lines to provide a centermost bottom section 9, upon each edge of which opposed side walls 10 are hinged. A half top section 11 is hinged along the outboard edge of each side wall. Anchoring means for the under core projections to prevent lateral displacement is provided for each tube of yarn along bottom section 9. In Figure 1, circular holes 12, of diameter sufficient to receive and hold the under core projection are provided. The holes in wrappers for a multiplicity of tubes are spaced center to center, at least more than twice the radius of the tube of yarn wrapped, thereby preventing edge to edge contact between adjacent tubes. Locking tabs 13 project from the outboard edge of each half top section, the said tabs being centered on and opposite to each anchoring means. The locking tabs have a dimension parallel to the outboard edge of half top section 11, substantially equal to the inside diameter of the upper core projection.

Figure 2 illustrates an interlock enclosing three tubes of yarn. In its folded form, the outboard edges of each half top section meet to form a smooth, flat surface, parallel to the bottom section. The construction is more readily apparent from Figure 3, a sectional elevation along lines 3—3 of Figure 2. The folding of locking tabs 13 into core 2 provides vertical stability to the tube of yarn, steadying the upper core projection. The under core projection 3 is firmly held within hole 12, its edge resting upon surface 14. It is apparent that in the interlock structure, in the shipping position as shown, no surface of yarn touches any protecting wall of wrapper. Furthermore, there is no contact between wrapper and the outer surface of the upper core projection. The flat, horizontal top permits stacking of the interlocks, for instance, in a larger, closed container. When stacked, the alignment of cores acts to support the weight of interlocks placed on top. Furthermore, the flat top acts to cushion any accidental misalignment of cores, preventing damage to the shoulder of the lower yarn package by the core of the upper.

Figure 6 shows a variation of anchoring means for the under core projection comprising a raised button 15 attached to bottom section 9, designed to fit snugly within the bore of the core at its under projection 3. A tube, a tab or a peg over which the core telescopes may likewise be used. Figure 7 shows a still further variation of anchoring means for the lower end of the core, wherein bottom section 9 is provided with a recess 16 designed to fit the outer surface at the edge of under core projection 3. An alternate design results by providing a shallow upright tubular member, of diameter sufficient to retain the outer surface of the core projection. It will be noted that the under core projection anchoring means are centered between side walls 10, the distance between the walls being at least greater than the diameter of the tube of yarn wrapped.

As is pointed out previously, locking tabs 13 provide anchoring means for upper core projection 8, as shown in Figures 3, 6 and 7. Since such construction avoids contact with the outer surface of upper core projection 8, scuffing of this surface, against which the yarn drags on

3

take-off, is prevented. Since the bore of the cores of yarn tubes employed in commerce are in general larger than 1 inch (3 inches being not unusual), a tab folded from a light to moderate weight corrugated blank to fit such a bore has a relatively high strength to shearing forces directed along its line of fold. Since the upper ends of cores of yarn packages in the form of a cone, i. e., with a conical core, employed in commerce are less than $\frac{3}{4}$, and usually less than $\frac{1}{4}$ inch, tab retaining means are generally unsatisfactory. Thus the wrapper of the present invention is intended particularly for use in shipping tubes of yarn as contrasted to cones.

The nature of the yarn protected in the tubular interlock of the present invention may vary widely. However, the interlock is of particular value in the wrapping of fragile yarn such as zero twist cellulose acetate.

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

This is a continuation in part of Breuer United States application No. 73,046, filed January 27, 1949, now abandoned.

What is claimed is:

1. The combination of a body of yarn and a wrapper therefor, the said body of yarn consisting of a yarn winding in the form of a tube on a round tubular core in such manner as to provide a core projection from each end of the yarn winding, the said wrapper being four-sided and tubular and consisting of two parallel sides, each having a length at least as great as the diameter of the said body of yarn and having hinged thereon along one edge, and serving to connect the said sides and to separate them by a distance at least greater than the diameter of the said body of yarn, a bottom section having centered thereon, between the said sides, retaining means for receiving and positioning the under core projection of the said body of yarn, the said under core projection being of sufficient length that when received and positioned relative to the said retaining means, the lower yarn winding shoulder is raised above the inner surface of the said bottom section, there being hinged along the edge of each side, opposite to the edge to which the bottom section is hinged, two half top sections folding parallel to the said bottom section, each of the said half top sections bearing a tab on the edge opposite to the edge hinged to the said side section, the said tabs of each half top section meeting over the said retaining means

4

and projecting downward, the body of yarn being positioned with its under core projection anchored by the retaining means and the tabs projecting into the bore of the upper core projection.

2. The combination of a plurality of bodies of yarn and a wrapper therefor, each of the said bodies of yarn consisting of a uniform yarn winding in the form of a tube on a round tubular core in such manner as to provide a core projection from each end of the yarn winding, the said wrapper being four-sided and tubular and consisting of two parallel sides, each having a length greater than the combined diameters of the said bodies of yarn and having hinged thereon along one edge, and serving to connect the said sides and to separate them by a distance at least greater than the diameter of one yarn winding, a bottom section having centered thereon, between the said sides, a parallel plurality of retaining means for receiving and positioning the under core projections of the said bodies of yarn, the said retaining means being spaced apart by a distance at least greater than the diameter of one yarn winding, each under core projection being of sufficient length that when received and positioned relative to the corresponding retaining means, the lower yarn winding shoulder is raised above the inner surface of the said bottom section, there being hinged along the edge of each side opposite to the edge to which the bottom section is hinged, two half top sections, folding parallel to the said bottom section, each of the said half top sections bearing a plurality of tabs, equal in number to the plurality of retaining means in the bottom section, on the edge of each top section opposite to the edge hinged to the said side section, each tab of one half top section meeting a tab of the other half top section over a retaining means and projecting downward, the plurality of bodies of yarn being disposed side by side, with cores parallel, each with its under core projection anchored by the retaining means and the tabs projecting into the bore of the upper core projection.

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