May 10, 1955 W. F. CARAHER 2,708,066

YARN TUBE WRAPPER

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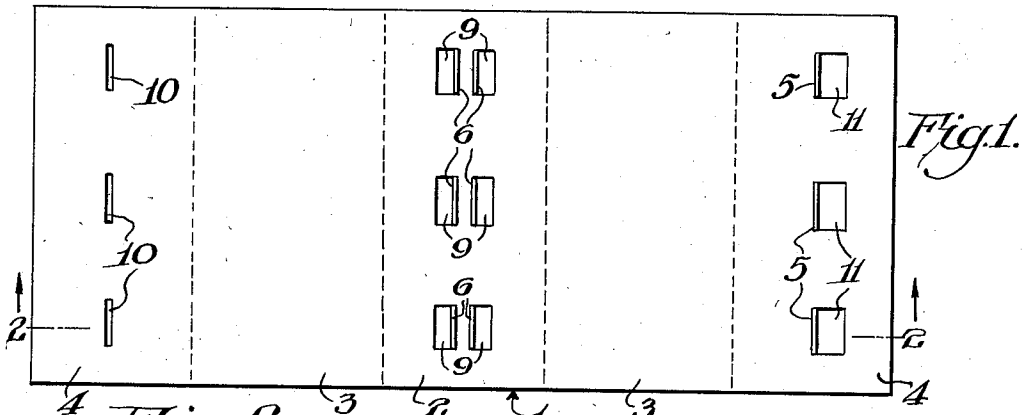


Fig. 1.

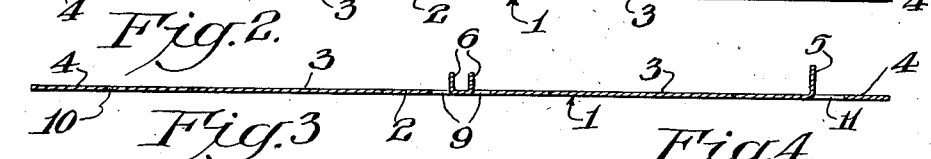


Fig. 2.

Fig. 3

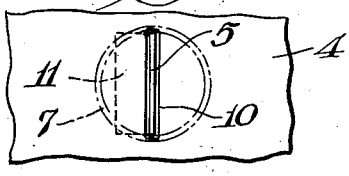


Fig. 4.

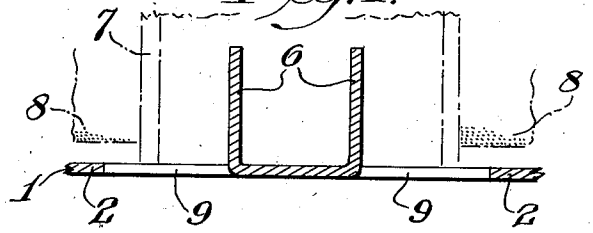


Fig. 5.

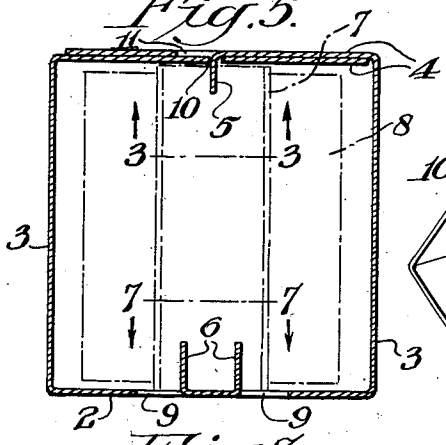


Fig. 6.

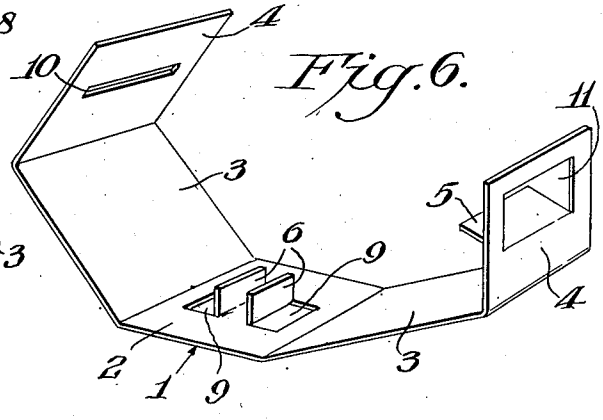
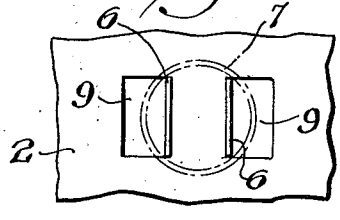


Fig. 7.



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YARN TUBE WRAPPER

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2 Claims. (Cl. 229—40)

This invention relates to new and useful improvements in shipping containers for wound yarn or any hollow or recessed items such as glasses, lamp chimneys, rolls of cellophane or paper and the like. More particularly, it relates to improvements in shipping cartons usually made of corrugated board of the type known as "folders" for transporting a plurality of tubes or packages of wound yarn or any hollow, cylindrical, paper or wooden core on which yarn, monofils, ribbons, etc. may be wound. More specifically the invention is concerned with the provision of a positive locking type carton for shipping low or zero twist yarn.

In the present development of textiles and particularly in the manufacture of cellulose acetate textiles, softer and lower twist yarns are being produced. These require great care and protection in handling and packaging for storage and for transportation. In shipping operations more than ordinary protection against abrasion is required owing to the delicate texture of the zero twist yarn and the liability to fraying or other injury by contact either with the yarn wound on other tubes or with the walls of the container. Care must also be taken to prevent any contact pressure on the yarn which might misshape the tube. There is also an increasing demand in the trade for a carton which is strong enough to be repeatedly used so as to effect a substantial saving of raw materials. To be strong enough for this repeated use, such cartons must be free of stitches and staples. The locking mechanism must be simple in construction and not necessitate any additional parts to the blank.

An object of this invention is to provide a carton which is simple in construction and inexpensive to manufacture and which is sufficiently rigid to insure the necessary protection against abrasion. Another object is the provision of a carton which will accommodate a plurality of individual tubes or like articles whereby the shipment and distribution of the articles to weaving, knitting or other machines is facilitated. A still further object is to provide a positive locking carton which will carry a number of tubes of zero twist yarn, each tube being maintained separately in place and immovable in any position of the closed shipping package and being protected from dust and dirt and being positioned so that the surface of each tube is protected from any contact with the adjacent tubes or with the sides of the package. The invention still further aims to provide a carton meeting the requirements stated above, and, at the same time, to provide a container which has simplicity and strength, and security of closure combined with ease of opening. A still further object of the invention is to provide a positive locking type carton which will not necessitate any additional parts to the corrugated blank and which can be easily fastened by the packer without loss of motion on his part or without requiring staples, tape or extraneous fastening means of any sort.

These objects are accomplished by the use of a blank for a folder having fold lines successively defining a bottom panel, side panels and top panels. One of the top

panels bears a slot cooperating with a tab in the other top panel which tab, when the top panels are properly overlapped, is passed through the slot and is inserted into the core of the packaged item. In the bottom panel are tabs over which the hollow tube or other items are placed. The various panels are adapted for successive folding of each perpendicular to the next, thereby bringing the top panels together so that the tab in the one top panel may be readily inserted in the slot of the other top panel downwardly into the aperture of the packaged item. The package, then, comprises the folded blank with tabs in locking contact with the core, tube or similar packaged item.

Reference is made to the description which follows and the drawings which are given for illustrative purposes only. Such disclosed means constitute, however, but one of the various structural forms in which the principle of the invention may be used.

In the accompanying drawings;

Figure 1 is a plan view of the blank from which the carton is made with the tabs folded out;

Figure 2 is a sectional view taken on line 2—2 of Figure 1;

Figure 3 is a fragmentary section on line 3—3 of Figure 5;

Figure 4 is a sectional view showing the relationship between the bottom tabs and the package;

Figure 5 is a cross sectional view of the closed package containing a core upon which the yarn is wrapped;

Figure 6 is a perspective view of a partially closed container and

Figure 7 is a fragmentary section on line 7—7 of Figure 5.

Referring to the figures the positive locking carton of this invention is preferably made from a unitary rectangular blank **1** divided, by the fold lines shown in dotted form in Figure 1, into a bottom **2**, sides **3—3**, top laps **4—4**, top flanging tabs **5** and bottom flanging tabs **6**.

Inasmuch as a carton for textile tubes has been selected as the illustrative embodiment, such as tube **7** shown in Figure 5 with yarn **8** wound on it, the blank **1**, as shown, has a plurality of centrally aligned bottom slots **9** which are formed in the die-cutting of bottom tabs **6**. A corresponding number of tube slots **10** are cut to receive the top tabs **5**. In the cutting of top tabs **5** holes **11** are formed. The cartons thereby accommodate a plurality of tubes and these are held in their proper relative positions in the container when the container is closed.

As shown in Figure 6, the carton is folded at the fold lines and the bottom tabs **6** are pushed into an upright position. The core **7** bearing yarn **8** is placed over these vertical tabs **6** thereby anchoring the tube **7** from the inside. The sides **3—3** are then folded into a vertical position and the top laps **4—4** are brought over the package with the top lap bearing the slot **10** being laid down first. The top lap bearing the tab **5** is then brought over the other top lap and the tab **5** is inserted downwardly through slot **10** and into the top of the tube **7**. The closed unit is shown in Figure 5.

As shown in Figure 3, the top tab **5** fits snugly inside the top aperture of the core. As shown in Figure 7 the bottom tabs **6** fit into the bottom aperture of the core in the locking contact shown. The core or the yarn package is thereby held rigidly in position.

The carton is substantially closed at the top. The overlapping arrangement of the two top panels **4** and the tight fitting of top tab **5** in slot **10** cooperate to close the package at the top. As shown in Figure 7, the bottom of the core rests in part on the inner surface of the bottom **2**. There is some opening into the package

but this is minimized by cutting the bottom tab **6** to such a length so that the package is adequately supported and so that the area covered by the opening is confined to an opening to the inside of the core so that there is no exposure of the yarn. Even if there is some opening to the yarn there is little danger of yarn damage since the opening is on the bottom of the container.

As shown in Figure 5, the yarn does not come in contact with the bottom or the top panels. Rubbing and scuffing is thereby minimized. There is a close, firm, frictional contact between the top panels and the top of the core, between the edges of the top tabs and the inner surfaces of the core, between the bottom and the bottom surface of the core and between the edges of the bottom tabs and the inner surfaces of the core. There is no tendency for the top tab **5** to spring up out of place once it is inserted downwardly through the slot **10** into the core of the package. The top tab is a single tab and this permits its ready use on cores of small inner diameters. The edges of the anchoring tab **5** may be serrated to a slightly larger width than the width of the slot **10** or the inner diameter of the tube. Even more positive locking action is obtained thereby. To open the package one merely grips the top tab-bearing panel and with a slight pulling motion pulls it outwardly removing the top tab **5** from the slot **10**. Upon lifting up the top slot-bearing panel the tubes are exposed for ready removal.

The bottom tabs, top tabs and top slots in this container are not limited to any specific number, the size and shape of the individual package, as well as the desired size and shape of the master container, being limiting factors. For example, this container has been used for three different kinds of packages, two of which are yarn bobbins packed five to a container and the other, a yarn tube, packed six to a container. It is also possible to have multiple rows of slots and tabs, thereby making it possible to pack, say two rows of five packages each or ten packages per container. In addition, the container is used for a bobbin on which the yarn is wound on a tapered cylindrical core. This is done by having the bottom tabs and the top tabs a different size.

The container of this invention has certain definite advantages over those previously known. For example, the upward extending bottom tabs **6** permit the ready and rapid location of the bottom of the tube in the folder and securely anchor the tube in place. The bottoms of the tubes rest mainly on the bottom panel and are thereby protected. The bottom tab may be die-cut either parallel or perpendicular to the top tabs. Angular cuts may also be used in either top or bottom panels. For example, a container with bottom tabs at a 45° angle to the top tab is very useful. The outside bottom of the folder is smooth and has no protruding package edges and can accordingly be slid over another surface without damaging or dislodging the cartons. In the storing of yarn the yarn is kept out of contact with the folder and is free of contact with any other yarn package. Additional means such as pegs are not needed to keep the yarn out of contact with the walls, top or bottom of the carton.

The container of this invention may be also provided with end flaps to form ends in a self-locking fashion. Since the cartons are usually stored and shipped in a

master container, it is more convenient and more economical to use the sides of the master container as ends. Stacking of the cartons of this invention is readily and uniformly accomplished and the closed packages may be shipped in any customary master container.

From the foregoing it may be seen that this positive locking type carton for packaging zero twist yarn has the advantages of very simple construction and operation, security of holding against unintended opening and ease of opening by intention. Moreover, it may be reused ten times or more. The invention also makes possible a one-piece folder of practically rectangular outline with little waste of material that requires no supplemental fastening of any sort. Furthermore, the new type carton requires no dividers. The articles or the material wound on a tube may be held in a secure position out of contact with other tubes or the various parts of the carton even during the considerable jostling encountered in shipping.

Any departure from the above description which conforms to the present invention is intended to be included within the scope of the claims.

I claim:

1. A suspending wrap for yarn tubes comprising a paperboard container of substantially rectangular cross section having inner and outer top closure flaps together constituting a two-layer top wall, the inner flap being slotted and the outer flap having a tab struck downwardly from it and inserted through the slot, and a bottom wall having a pair of parallel tabs spaced apart from each other struck upwardly from it and located below the tab of the top flap and equidistant from it.

2. A suspending wrap for yarn tubes comprising a paperboard container of substantially rectangular cross section having inner and outer top closure flaps together constituting a two layer top wall and a bottom wall, two rows of tabs struck upwardly from said bottom wall with the tabs of each row spaced apart and aligned lengthwise thereof, the tabs of said two rows being arranged in pairs with the tabs of each pair aligned and spaced apart transversely of said bottom wall, said inner flap having lengthwise slots therein, and tabs struck downwardly from the outer flap of said top wall and inserted through said slots, said top wall tabs being disposed in a row spaced apart and aligned lengthwise thereof, said row of top wall tabs being disposed midway between said two rows of bottom wall tabs and respectively aligned with the spaces transversely of said bottom wall between the respective pairs of bottom wall tabs.

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