Sept. 25, 1956 L. F. PROSSEN 2,764,285

CARTONS

Filed Feb. 20, 1953

FIG. 1.

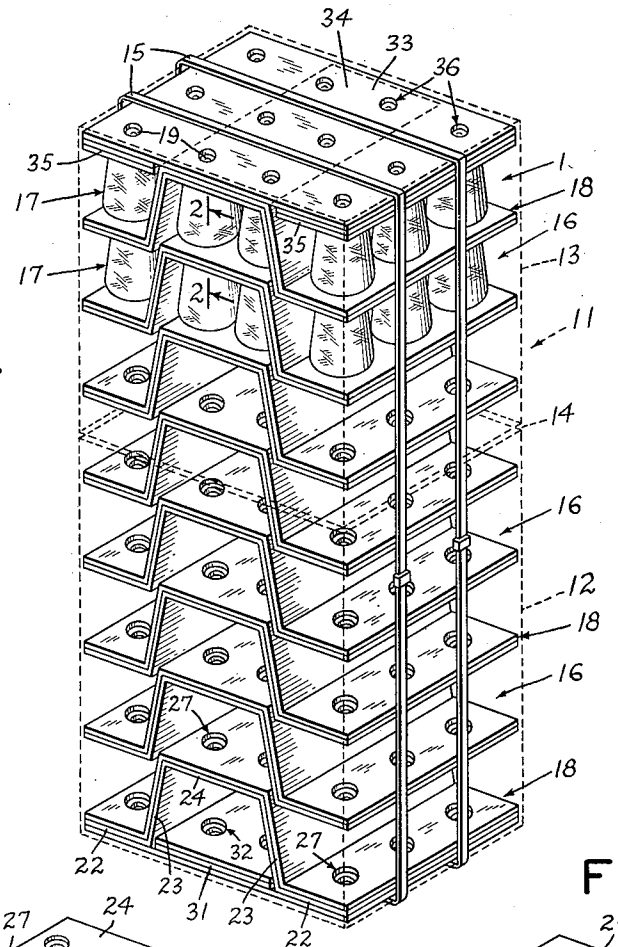


FIG. 4.

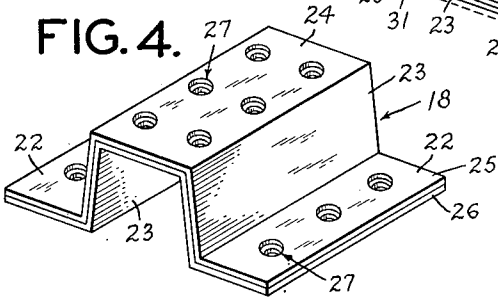
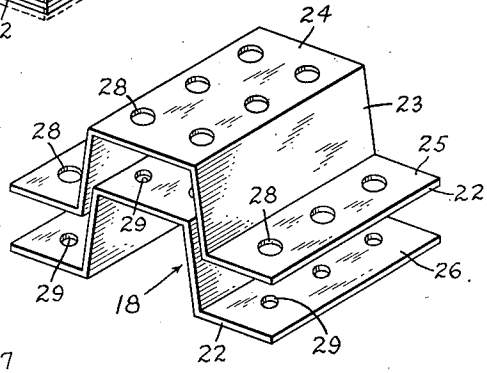


FIG. 3.



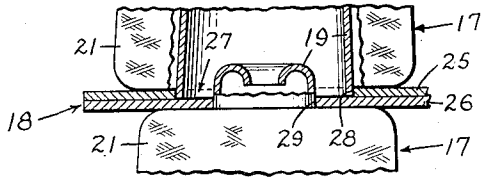


FIG. 2.

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2,764,285

CARTONS

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3 Claims. (Cl. 206—65)

This invention relates to cartons and relates more particularly to cartons for the storing and shipping of packages of yarn.

The bulk of the yarn produced in the textile industry is wound into packages such as bobbins, cones, cheeses, pirns or the like. During the storing and shipping of these packages of yarn they must be supported so as to prevent them from rubbing against each other or against the walls or inserts of the cartons in which they are contained, since such rubbing would damage at least the outer layers of yarn of said packages. It has been previously proposed to arrange the packages of yarn in superimposed layers, each of which layers is supported by a generally flat, horizontal tray provided with means for engaging the ends of the packages of yarn. After the desired number of packages of yarn have been arranged in this manner, the entire assembly is enclosed in a carton, which is bound together, as by means of a steel strap or the like. While the carton prepared in this manner is generally satisfactory, it has been found to suffer from a number of defects. When there are more than two rows of yarn packages in a layer, there is a tendency, particularly in the top layers, for all but the outer rows of yarn packages to be dislodged during handling with the result that the yarn packages will tumble about and rub against one another. In addition, when the carton is laid on its side, the trays do not always provide a completely adequate support for the yarn packages so that there is the possibility that the yarn packages will break away from the engaging means holding them in position. The trays, which act to brace the interior of the carton, also fail to provide sufficient internal strength to the carton to permit the safe stacking of the cartons, one on top of another.

It is an important object of this invention to provide a carton for the storing and shipping of packages of yarn which will be free from the foregoing and other disadvantages and which will be especially simple in construction and efficient in use.

A further object of this invention is to provide a carton for the storing and shipping of packages of yarn which will engage said packages securely so as to avoid relative movement thereof and damage to the yarn wound thereon.

Other objects of this invention, together with certain details of construction and combinations of parts, will be apparent from the following detailed description and claims.

It has been found that the tendency for all but the outer rows of yarn packages to be dislodged during handling arises, at least in part, from the fact that the pressure of the steel straps, or other bindings of the carton, is greatest at the edges of the carton and diminishes rapidly away from said edges. As a result, the yarn packages are held securely in place at the edges of the carton, but will tend to work free at other positions.

According to the present invention, the foregoing difficulties are corrected by providing a carton comprising an outer case having positioned therein a plurality of

layers of yarn packages. The layers of yarn packages are supported by trays comprising a pair of side webs disposed in a common horizontal plane. Extending upwardly from the innermost edges of the side webs are a pair of intermediate webs whose uppermost edges are joined by a central web which is also disposed in a horizontal plane. The side webs and the central web are provided with means for engaging the packages of yarn supported thereby. When a carton having this construction is bound, as by means of steel straps or the like, pressure will be applied to the packages of yarn adjacent the edges of the carton. This pressure will act to hold the packages of yarn adjacent the edges of the carton securely in place. It will also be transmitted through the intermediate webs to the central web and the packages of yarn supported thereby whereby the said packages of yarn will be urged against the central web and thereby be held securely in place. The intermediate webs will also act to strengthen the trays so that in the event the carton is placed on its side there will be adequate structural strength to support the packages of yarn and prevent them from breaking away from the tray. The said intermediate webs strengthen the carton so that several cartons may be safely stacked one on top of another.

The carton of this invention is particularly well adapted for the packing of cones of yarn each comprising a support of generally conical shape having a yarn winding positioned thereon in such a manner that the ends of the support project from the yarn winding. In this case, the side webs and central web of the trays may be provided with apertures adapted to receive and engage the yarn package support. Thus, each of the trays may be fabricated of two layers of material, the lower of which has relatively small apertures therein adapted to receive and engage the tips of the yarn package supports and the upper of which has relatively large apertures therein adapted to receive and engage the bases of the yarn package supports. The two layers of material are superimposed with the apertures in registry and are shaped, either before or after assembly, in the manner outlined above to form a tray.

It is desirable, in the carton of this invention, to have all the packages of yarn in a given layer disposed in a common horizontal plane. To achieve this arrangement it is necessary to nest the trays a distance substantially equal to the thickness of the side webs. To permit such nesting, the intermediate webs are inclined inwardly in an upward direction. In addition, the vertical height of the intermediate webs is made sufficient to permit such nesting while providing adequate space for the packages of yarn between the trays.

The trays and carton of this invention may be fabricated of any suitable material such as corrugated board, paper board and the like.

A preferred embodiment of this invention is shown in the accompanying drawing wherein

Fig. 1 is a perspective view, with parts in phantom, of the carton,

Fig. 2 is a cross-sectional view, taken along the line 2—2 in Fig. 1, in the direction of the arrows,

Fig. 3 is an exploded perspective view of one of the trays, and

Fig. 4 is a perspective view of an assembled tray.

Referring now to the drawing, the reference numeral 11 designates generally a case comprising a lower half 12 and an upper half 13 which are abutted together along a line 14. The case 11, when filled, is bound together by steel straps 15. Positioned within the case 11 are a plurality of horizontal layers 16 of cones 17, each of which layers 16 is supported by a tray 18. As shown in the drawing, each of the layers 16 comprises four rows of cones 17, there being three cones in each row. The

cones 17 are conventional and comprise a support 19 of generally conical shape having a yarn winding 21 positioned thereon in such a manner that the ends of the support 19 project beyond the said yarn winding.

The trays 18 comprise a pair of side webs 22 disposed in a common horizontal plane, a pair of intermediate webs 23 extending generally upwardly from the innermost edges of the side webs 22, and a central web 24 joining the uppermost edges of the intermediate webs 23. As shown in detail in Figs. 3 and 4 of the drawing, the trays 18 are fabricated of two layers of material 25 and 26 that are secured together in any suitable manner, as by the use of an adhesive, or by stitching, stapling or the like. There are provided in the side webs 22 and the central web 24 a plurality of apertures, indicated generally by the reference numeral 27, for engaging the ends of the supports 19 of the cones 17. One row of apertures is provided in each of the side webs 22 and two such rows are provided in the central web 24. The apertures 27 each comprise a relatively large aperture 28 in the layer of material 25 which is adapted to receive and engage the base of the support 19, and a relatively small aperture 29 in the layer of material 26 which is adapted to receive and engage the tip of the support 19, as shown in Fig. 2 of the drawing.

In packing the cones 17 into the case 11, there is placed in the bottom of the case, a liner 31 having a thickness substantially equal to the thickness of the side webs 22 and having a width substantially equal to the spacing between the lowermost portions of the intermediate webs 23. The liner 31 is provided with two rows of apertures 32 substantially identical in structure to the apertures 27. Two rows of cones 17 are placed on the liner 31 with the bases of the supports 19 of said cones engaged in the apertures 32. A tray 18 is then placed on said two rows of cones 17 in such a manner that the tops of the supports 19 of said cones are engaged in the apertures 27. In this position, the side webs 22 will lie in the same horizontal place as the liner 31. Four rows of cones 17 are then placed on the tray 18, two of said rows of cones 17 being positioned on the side webs 22 with the bases of their supports 19 engaging the apertures 28 in said side web, and the other two of said rows of cones 17 being positioned on the central web 24 with the bases of their supports 19 engaging the apertures 28 in said central web. Another tray 18 is then placed in said case 11 on said four rows of cones 17 in such a manner that the apertures 27 in said tray 18 will engage the tips of the supports 19 of said cones to hold them securely in place.

As shown in the drawing, the intermediate webs 23 of the tray 18 are inclined toward each other in an upward direction so that when the trays 18 are placed on top of one another they can nest sufficiently to bring the side webs 22 of one of said trays into the same horizontal plane as the central web 24 of the tray beneath it. In addition, the vertical height of the intermediate web 23 is made sufficient to permit such nesting while providing adequate space for the cones 17 between the trays.

The packing process described above is continued until the desired number of layers 16 of cones 17 has been assembled. A top liner 33 is then placed over the topmost layer of cones 17. The top liner 33 comprises a sheet of material 34 of sufficient size to cover all four rows of cones 17. Secured to the undersurface of the side edges of the sheet 34 are layers of material 35 which have a thickness substantially equal to the thickness of the central web 24 and which extend from the intermediate web 23 to the free edge of the sheet 34 whereby the layers of material 35 will contact the cones 17 in the top layer 16. The top liner 33 is provided with a plurality of apertures 36 substantially identical to the apertures 27 which are adapted to receive and engage the tips of the supports 19 of the topmost layer of cones 17.

After the top liner 33 has been placed over the cones 17, the upper half 13 of the case 11 is put into position and the case is bound together by the steep straps 15. The pressure exerted by the steel straps 15 will act to hold the layers 16 of cones 17 in contact with the trays 18. As explained previously, the extent of such pressure will be considerably greater on the rows of cones 17 adjacent the side edges of the case 11 than on the rows of cones 17 in the center of said case. This greater pressure will be transmitted through the intermediate webs 23 to the center rows of cones 17 so as to hold said center rows of cones securely in place at all times. The additional strength of the intermediate webs 23 will also give internal structural strength to the assemblage in the event that the carton is placed on its side.

It is to be understood that the foregoing detailed description is given merely by way of illustration and that many variations may be made therein without departing from the spirit of my invention.

Having described my invention, what I claim and desire to secure by Letters Patent is:

1. In a carton for the storing and shipping of packages of yarn arranged in superposed layers, the combination with said packages of yarn, of a plurality of trays spaced vertically one above the other for supporting said layers of packages of yarn and being supported by said layers of packages of yarn, said trays comprising a pair of side webs disposed in a common horizontal plane for supporting packages of yarn, a pair of intermediate webs extending upwardly from the innermost edges of said webs and a central web joining the uppermost edges of said intermediate webs and disposed in the same horizontal plane as the side webs of the tray above, said central web being supported by packages of yarn and supporting other packages of yarn thereabove, means in said side webs and said central web for engaging the packages of yarn, a case enclosing said packages of yarn and trays, and binding means encircling said case, the pressure of said binding means being transmitted to the packages of yarn supported on said side webs and from said last named packages of yarn to said side webs and from side webs through said intermediate webs to said central web thereby to urge said central web firmly against the packages of yarn it is supported on to hold said packages of yarn securely in place.

2. A carton as in claim 1 wherein the intermediate webs are inclined inwardly from the innermost edges of said side web.

3. A carton as in claim 2 wherein the packages of yarn comprise cones comprising a generally conical support having a yarn winding positioned thereon in such a manner that the ends of the support project from the yarn winding, and the side webs and the central web are provided with apertures for receiving and engaging the ends of the conical supports of the cones of yarn.

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