Aug. 17, 1943. G. F. COURSON 2,326,928

CARTON

Filed Jan. 27, 1940 3 Sheets-Sheet 1

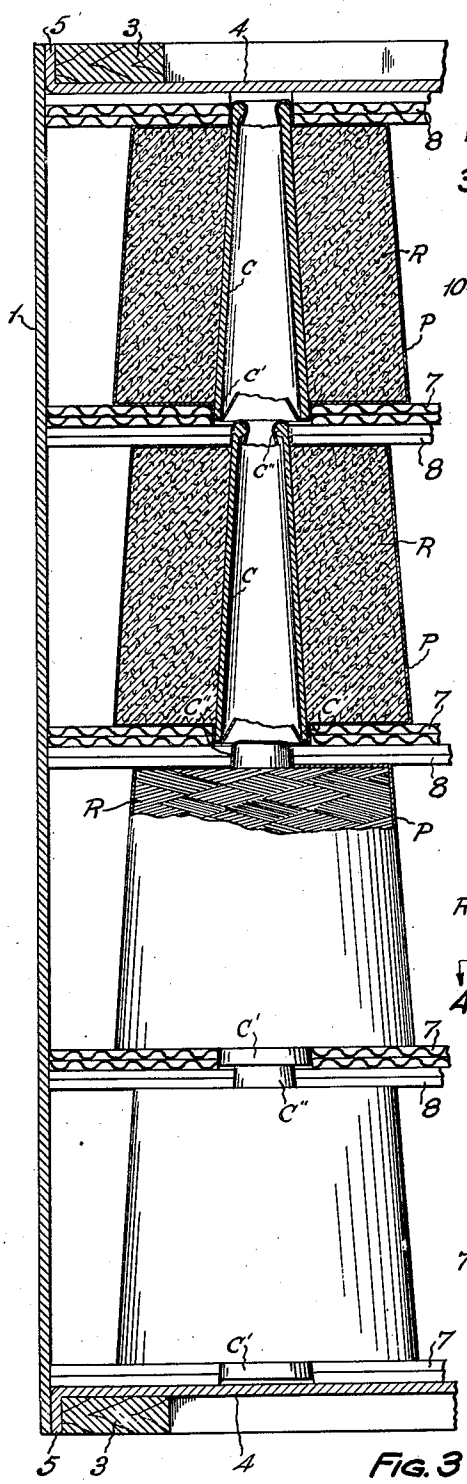


FIG. 3

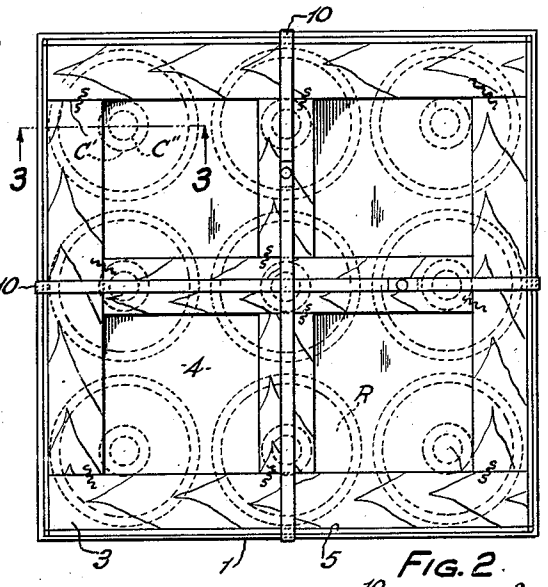


FIG. 2

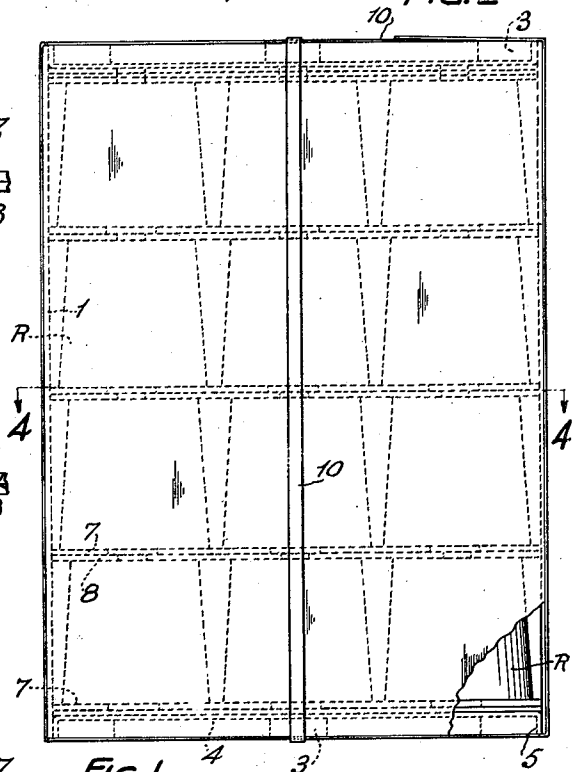


FIG. 1

INVENTOR.
GEORGE F. COURSON
BY Robert W. Wilson
ATTORNEY.

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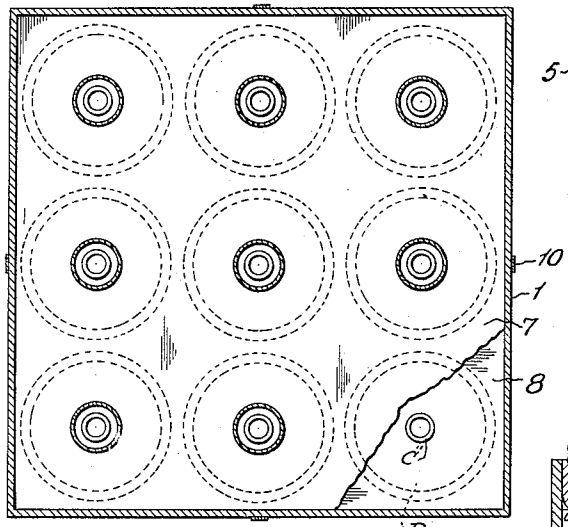


FIG. 4

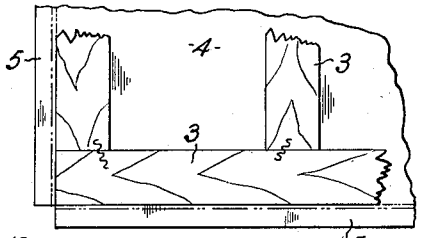


FIG. 5



FIG. 6

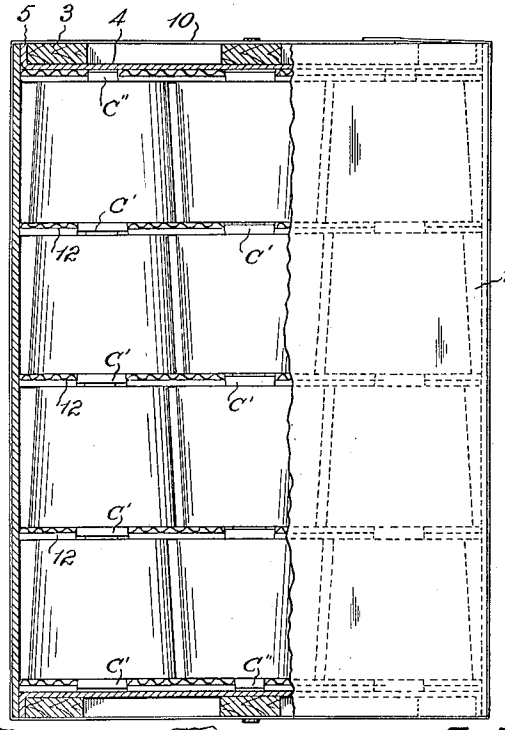


FIG. 7

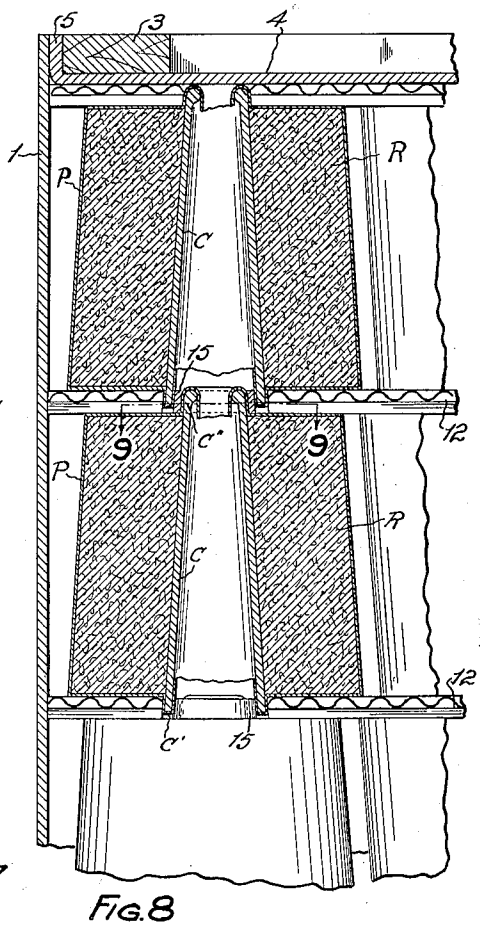


FIG. 8

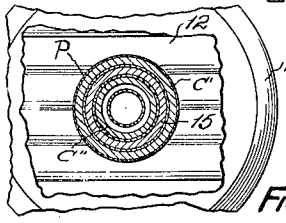


FIG. 9

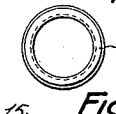


FIG. 10

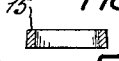


FIG. 11

BY

INVENTOR.
GEORGE F. COURSON
Robert W. Wilson
ATTORNEY.

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CARTON

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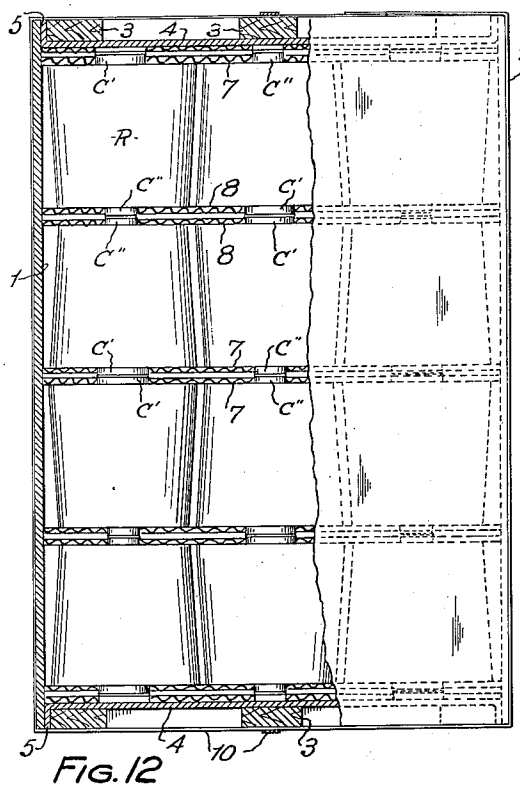


FIG. 12

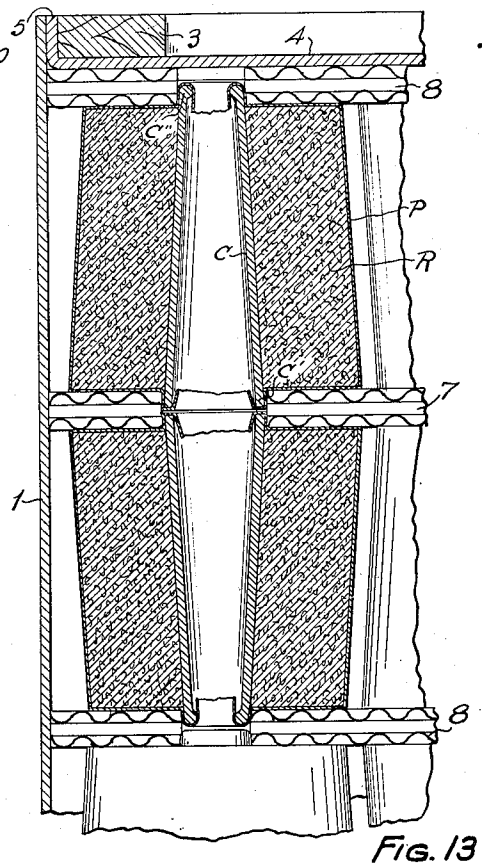


FIG. 13

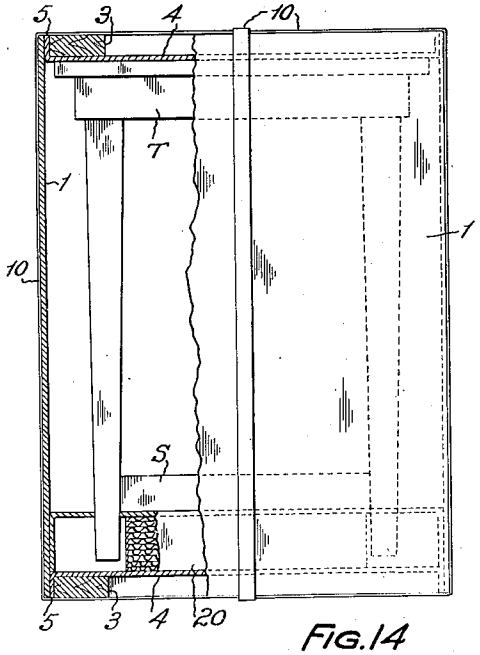


FIG. 14

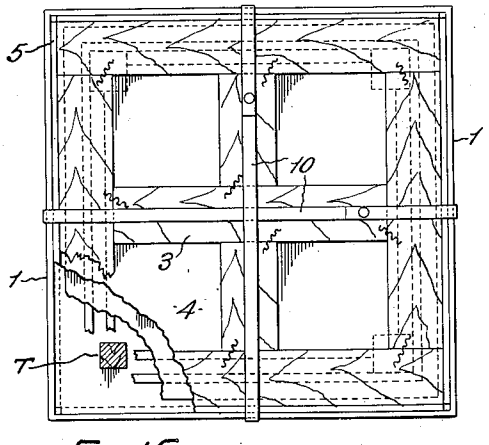


FIG. 15

INVENTOR.
GEORGE F. COURSON
BY Robert W. Wilson
ATTORNEY.

Patented Aug. 17, 1943 2,326,928

UNITED STATES PATENT OFFICE

2,326,928

CARTON

George F. Courson, Cleveland, Ohio, assignor to The Hinde & Dauch Paper Company, Sandusky, Ohio, a corporation of Ohio

Application January 27, 1940, Serial No. 315,952

2 Claims. (Cl. 206—65)

This invention relates to means for packaging goods and materials, particularly heavy, for shipment, and is specifically described in connection with a shipping carton and method of packing and securing the same for cones of rayon or other textile yarn, as well as for furniture. The word "cones" is intended to include such other wound yarn packages as cops, quills, cheeses, and the like, whether or not geometrically cone shaped. It has hitherto been thought necessary to package rayon cones with the top and bottom of the cone out of contact with any surfaces in the package, and considerable effort has been expended on accomplishing this result. The necessity for holding the ends clear arises from the fact that a rayon cone contains a single continuous length of yarn, which is delicate and can be readily broken by abrasion, and if this single length of yarn is broken it causes stoppage of the knitting or weaving machinery and the broken yarn must be knotted, causing imperfect goods. Therefore a cone in which there is a break in the yarn at any place is defective and results in a financial loss. It has accordingly been the continual effort of inventors in this field to devise corrugated board packages for rayon cones in which the cone would be supported by its core, but with top, bottom, and sides all entirely out of contact with the side walls, top, bottom or intermediate pads of the container.

In my present invention I depart entirely from previously accepted principles governing the packing of delicate yarns, such as rayon, and not only have the top and bottom of each cone in contact with the packing material, but apply a strong compression stress to the cones, which I build up in columns and compress together so tightly with intermediate corrugated board pads that there can be no shifting, sliding or chafing, and consequently the yarn on the bottom and top surfaces of the cones is firmly held in place and ribbing is impossible.

For this purpose I use a carton with heads which may be described as internally telescoping, which I move inward and tie by tension fastening elements, with the result that after the package is filled the cones are pressed together firmly endwise and remain under axial compression and the heads are pushed into the container body as far as may be necessary to maintain each vertical column of cones in what is substantially a unitary structure.

The accompanying drawings (except for two figures which show furniture packed by my method) illustrate a carton for shipment and storage of 36 cones, although it will be appreciated that the invention may be applied in other sizes and combinations of vertical and horizontal tiers, and that non-conical yarn packages such as cops, quills, cheeses and the like can be similarly packed.

Fig. 1 is a side elevation of the completed and closed carton;

Fig. 2 is a plan view of the same showing the top head in place;

Fig. 3 is a fragmentary vertical section, with some parts in elevation, from Fig. 1 but on a larger scale, showing the interior details of the packing;

Fig. 4 is a transverse horizontal section on the plane 4—4 of Fig. 1;

Fig. 5 is a top (or bottom) detail, showing the action of the wooden frame and corrugated board liner of the head in relation to one another;

Fig. 6 is a side elevation of Fig. 5;

Fig. 7 is a view partly in side elevation and partly in vertical section, showing a packing arrangement modified from that of Fig. 1;

Fig. 8 is an enlarged vertical section, with some parts in elevation, showing a further modified packing arrangement;

Fig. 9 is a horizontal section on plane 9—9 of Fig. 8;

Fig. 10 is a plan view of a spacer ring from Fig. 8;

Fig. 11 is a vertical central section of the same;

Fig. 12 is a view corresponding to Fig. 7, but showing a further modification;

Fig. 13 is an enlarged detail from Fig. 12, in vertical section;

Fig. 14 is a view partly in elevation and partly in vertical section showing the application of my method of packing to other goods, specifically a piece of furniture;

Fig. 15 is a top plan view of Fig. 14, with parts broken away to show the interior arrangement.

Referring first to Figs. 1, 2, 5 and 6, it will be seen that my container comprises an exterior tube or shell of rectangular cross section, having four walls all designated generally by the reference character 1, and fastened at one corner by the usual box maker's joint, which is not shown. The preferred material is heavy corrugated board. The heads each comprise a wooden frame 3 with one or more liner sheets of corrugated board 4 attached to the underside thereof, and overlapping at the edges as at 5

but not overlapping at the corners. The outer dimensions of this frame fit the top and bottom of the side walls 1, with just sufficient allowance for the thickness of the marginal flaps 5 so that when the head is put into the shell 1 the flaps 5 fold up against the edges of the frame 3, and preferably are of width just equal to the thickness of such framing, so that their edges do not stand above the wood and the top telescopes neatly into the upper or lower end of the container shell, as seen in Fig. 3 and elsewhere. The flaps 5 are cut away at the corner to allow meeting on a vertical junction at the corner of the framing. No adhesive is used.

To pack the container a head is put in the bottom as in Fig. 1, then a pad 7, is put in, made of a plurality of plies of corrugated board and perforated at proper spacing to receive the lower ends C' of the cone cores C. The lower tier of rayon cones R is put in; then another pad 8, similar to 7 but with smaller perforations to fit the upper ends C'', is put on, then another pad 7, another tier of cones, and so on until the box is filled. It is to be noted that the pads 7 are thicker than the extension of C' below the bottom of the rayon, and that the upper ends C'' rest without touching the adjacent lower ends C'. Thus when the top pad 8 is in place and the heads squeezed inward by the straps 10, pressure is transmitted through the bodies rayon R and those parts of the pads which are between the cone ends, so that for example all four cones of Fig. 3 act as a column in which all of the compression stress is carried by the actual yarn and none by the cores C. By setting up the straps 10 tight enough there can be no end rubbing of the yarn. The usual practice has long been to wrap each cone in waxed paper P. Preferably the corrugations in the pads, or in each layer of the pads are successively crosswise to those in the next layer or next pad, as shown in Figs. 3 and 8 and elsewhere. Extra pads may be used in top or bottom if considered advisible.

After the container is filled, the entire structure is fastened together into a tight structure under compression stress by the steel straps 10 as many being used as the size and weight of the container require. The straps are preferably of the type which can be permanently fastened while tightened to any extent. They bear during this tightening upon the wooden frame 3 of each head, thus forcing the cones upon their intermediate pads very firmly. The straps cut into the corrugated board of the shell 1 to some extent as the head is moved inward.

The cones can be variously arranged in their tiers, either with large ends down and small ends up throughout the column, as in Figs. 1, 3 and 8; or with large ends down and small ends up in one column, and the reverse arrangement in the next column, as in Fig. 7, thus conserving lateral space; or alternating abutting large and abutting small in each column, as in Fig. 12.

Still another specific modification is illustrated in Figs. 8 to 10 inclusive, where the small ends C'' protrude into the large ends C' of the cores C, but the perforations in the intermediate pads 12 are of a size to receive the large ends C' only. Conical collars 13 illustrated in Figs. 10 and 11, of conical shape, and made of molded pulp or other similar material, fit by their inner diameter on the upper small ends C'' of the cores, and by their outer diameter fit in the lower ends C' of the core next above, thus aligning the cones R while using only a single size perforation in the pads. In this arrangement also the compression is carried down through the rayon from one head through the pad to the top of the next cone R, through that cone to the pad below and so on to the bottom head. The collars 15 are loose enough to allow such slight slippage of the cores as occurs in connection with the shortening of the column due to the compression force.

My invention is also applicable to packing materials other than rayon cones, as for example the packing of a table T as shown in Figs. 14 and 15, wherein the upper head 3, 4 is shown as applied directly to the top of the table, although of course a protective covering of paper might be laid on the table top if needed, and the lower end is shown as pressing upward against a slightly resilient filler 20 which in turn bears against a lower shelf S on the table T.

Although I have disclosed certain preferred forms and modifications of my invention it will be understood that these are illustrative rather than limiting, and that the claims are to be looked to as defining the limits of the invention. It will be understood that the term "cones" in the claims is a term of description and not of limitation, and includes non-conical packages of wound yarn.

I claim:

1. A package for yarn or the like comprising in combination walls and a plurality of columns of yarn cones therein, said columns extending parallel to said walls, each cone being wound on a core extending beyond the ends of the cone, padding between said cones of greater thickness than the extensions of said cores beyond the cone ends whereby no weight is carried upon said extensions, said padding bearing directly upon the top and bottom surfaces of said cones, and closure means for said package adapted to slide inwardly within the walls of said package, thereby seating the ends of the cones firmly in said padding.

2. A package comprising a plurality of yarn cones individually wound on cores, which cores project beyond the ends of the cones, said cones being arranged in horizontal tiers and vertical columns, horizontal pads in said package between tiers, said pads having perforations adapted to receive core ends, the centers of said perforations being aligned in the successive pads thereby aligning the cones in columns, padding between said cones of greater thickness than the extensions of said cores beyond the cone ends and bearing directly upon the top and bottom surfaces of said cones, a shell constituting the outer covering of said package, heads slidable into said shell, ties pulling said heads together thereby applying compression stress to the columns of cones, the core projections being free from axial contacts, whereby the ends of the cones receive and transmit compression stress without any stress on the cores.

GEORGE F. COURSON.