

March 27, 1956

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2,739,705

YARN PACKAGING PAD AND SHIPPING CONTAINER USING SAME

Filed Sept. 24, 1953

3 Sheets-Sheet 1

Fig. 1

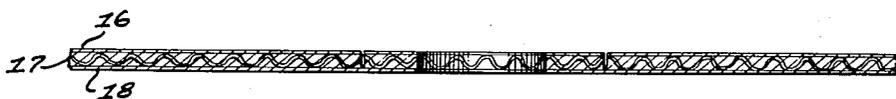
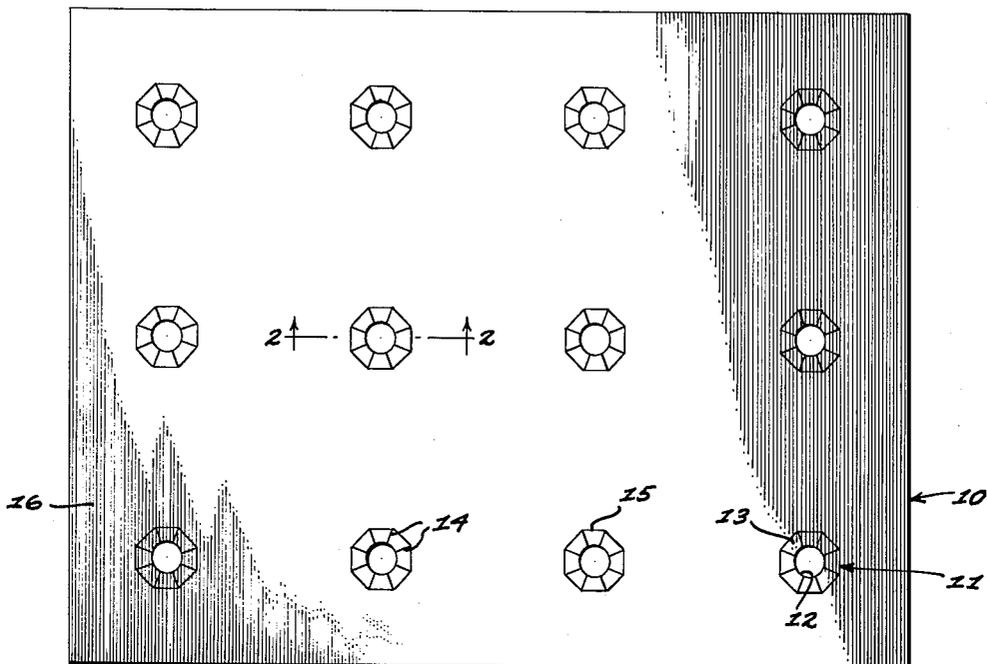
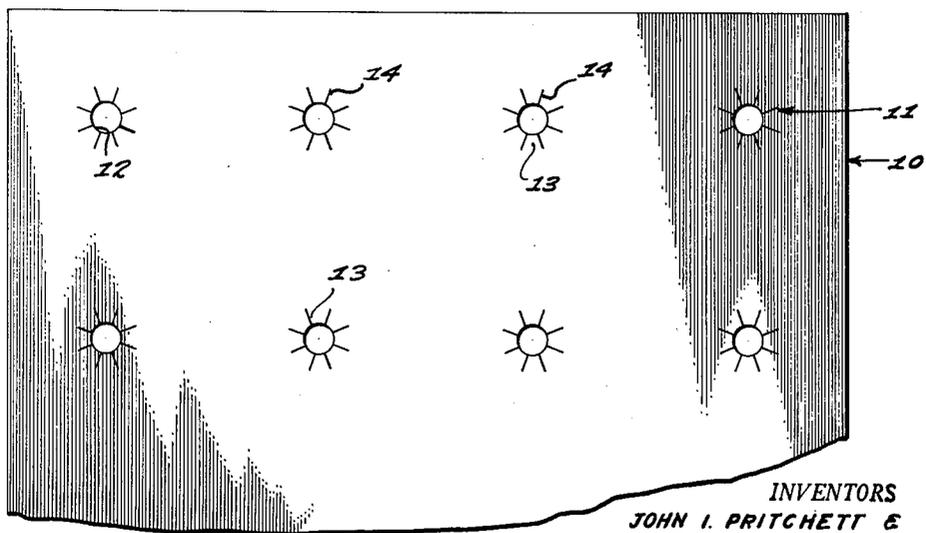


Fig. 2



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Fig. 3

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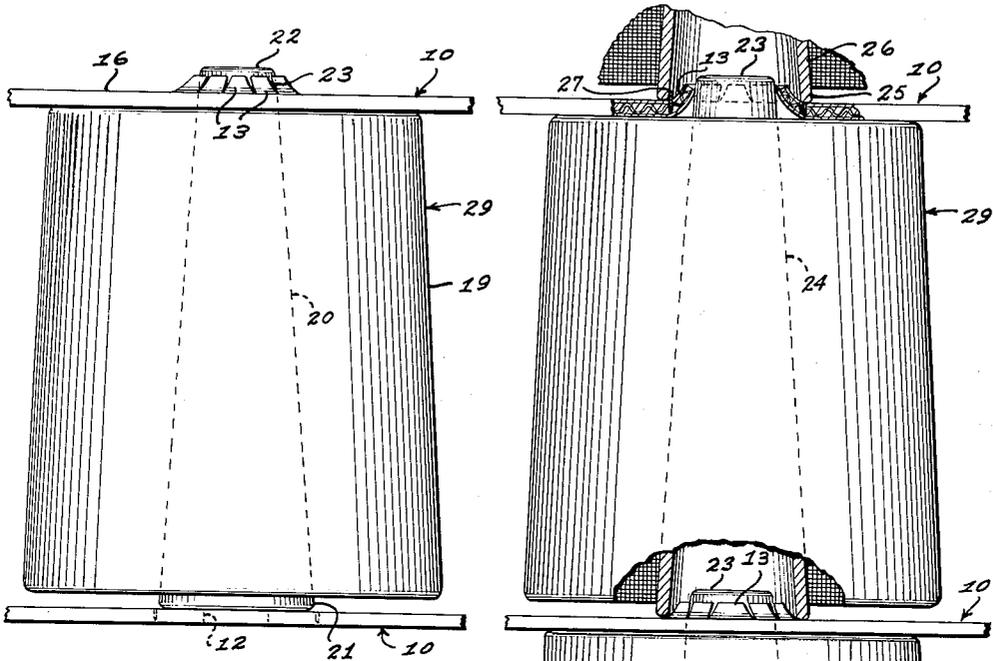


Fig. 4

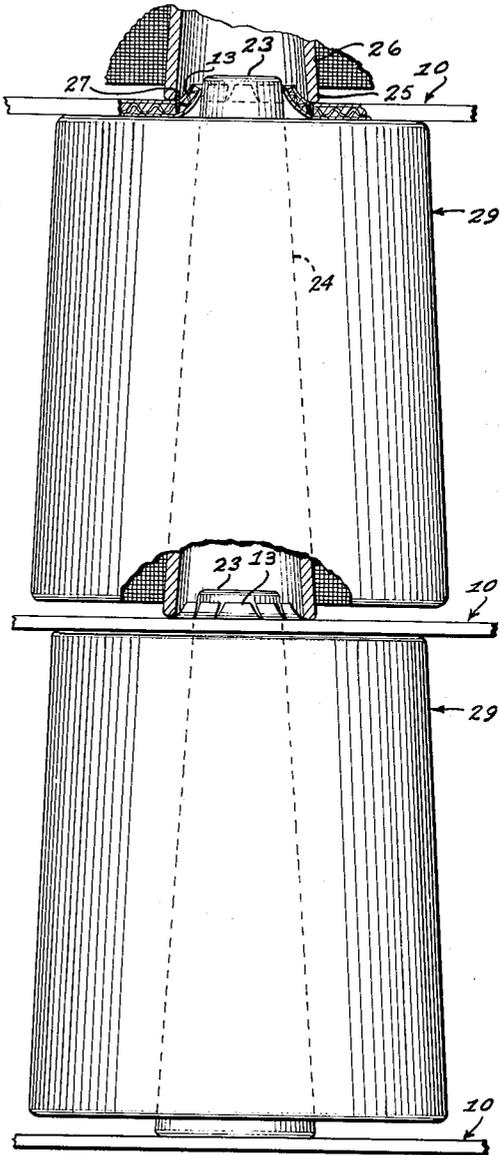


Fig. 5

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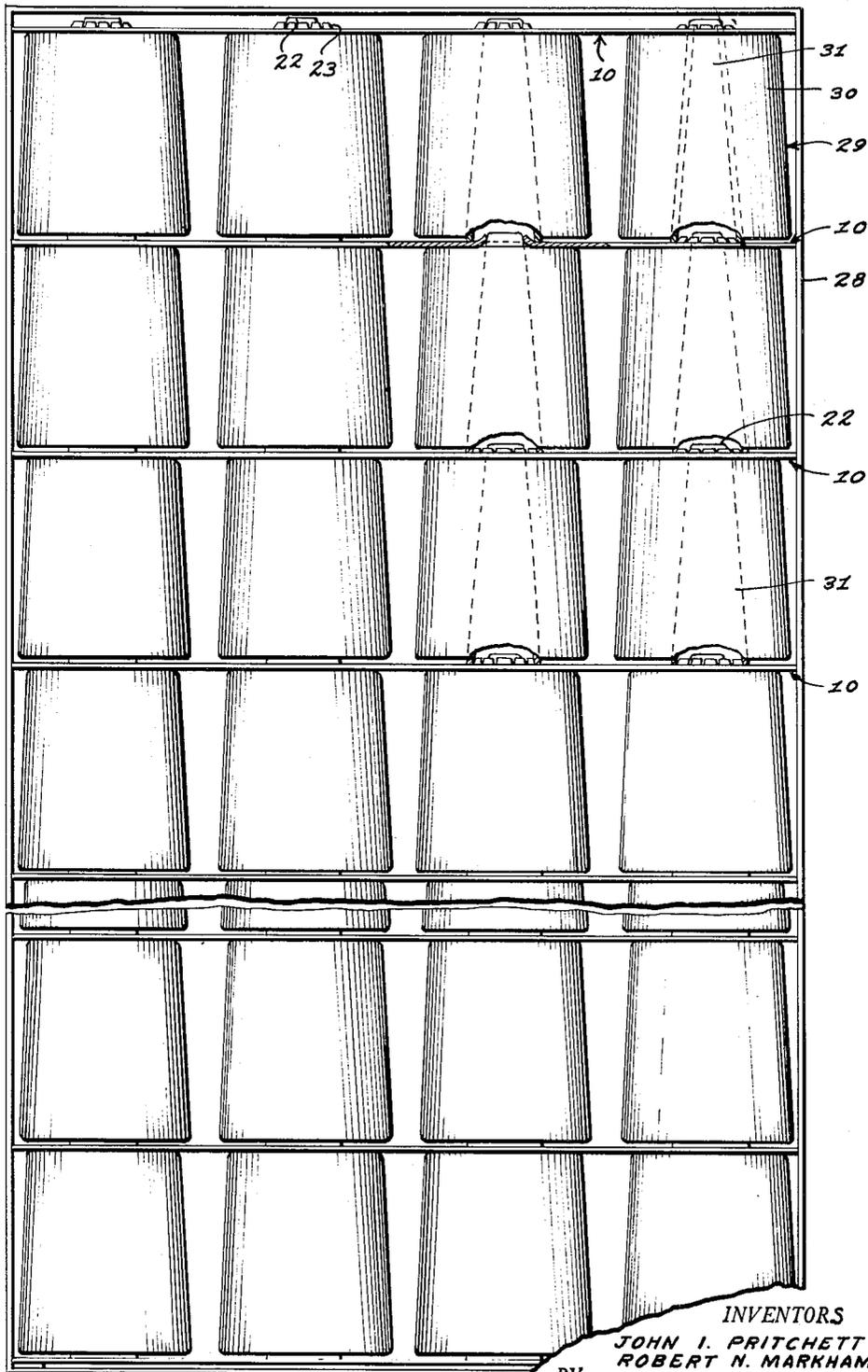
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Fig. 6

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YARN PACKAGING PAD AND SHIPPING CONTAINER USING SAME

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Application September 24, 1953, Serial No. 382,162

1 Claim. (Cl. 206—65)

This invention relates to a yarn packaging pad and use thereof in a shipping container for yarn packages. This pad comprises a paperboard sheet, which may be of single thickness or multi-ply, and having die-cut therein a plurality of especially designed apertures for engaging the apex of the yarn package conical core to prevent vertical or lateral displacement of the yarn packages in the container during shipment.

Each of the apertures in the yarn pad comprises a center hole die-cut through the paperboard, and a plurality of flaps radially arranged around the center hole and formed by die-cutting through the paperboard along two lines extending radially from the center hole, and leaving the remaining side intact to effect a hinge for each flap. These flaps are disposed in a sunburst design and are adapted to be spread or moved arcuately when the apex of a yarn package cone (core) is inserted in the center hole. When the flaps are thus moved they will engage the apex of the cone and hold the cone and yarn winding thereon in fixed position for shipment.

In use, a number of these yarn pads are located between tiers of yarn packages stacked vertically in a shipping container, with adjacent yarn packages being separated from each other by one of these yarn pads. In a typical commercial but non-limiting embodiment of the invention, seven of the yarn pads are used for separating the yarn packages into tiers, with a total of approximately 96 packages in each shipping container.

An important feature of the packaging arrangement of the yarn packages in the shipping container, which utilizes a plurality of the yarn pads, is the effective integrating or tying-in of the several yarn packages to produce a unitary structure, which resists accidental displacement of the yarn packages during shipment and thereby avoids damaging of the yarn wound on the yarn packages. This tying-together of the yarn packages is obtained by the above-mentioned spreading of the flaps surrounding each hole through which the apex of the yarn package core extends, whereby these flaps grip the apex end of the package core and in their expanded form fill the space—inner diameter—of the base of the cone of the adjacent yarn package located next above and in vertical alignment. This arrangement partially telescopes the apex end of one yarn package core into the base of the yarn package core just above and the spread-out flaps in the yarn pad make contact with the inner wall of the base of that core. As a result the yarn packages are integrated and prevented from moving laterally or vertically during shipment, especially when the shipping packages are thrown or dropped during loading and unloading operations.

Details of the invention will be more fully appreciated by reference to the accompanying drawings, in which:

Fig. 1 is a top plan view of a multi-ply yarn pad showing the apertures with the holding flaps radially arranged around each center hole;

Fig. 2 is a sectional view taken approximately along lines 2—2 of Fig. 1;

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Fig. 3 is a bottom plan view of the pad shown in Fig. 1;

Fig. 4 is an elevational view of a single yarn package and pad illustrating the flared arrangement of the flaps and their engagement of the apex end of the yarn package core;

Fig. 5 is an elevational view, partly in section, illustrating the telescoping arrangement of adjacent yarn packages; and

Fig. 6 is an open end view, partly in section, of a shipping container utilizing the yarn pads of this invention.

Referring now to the several figures in the drawings and generally in the order in which they occur, the yarn pad 10 contains a plurality of apertures indicated generally at 11 and each aperture containing a center hole 12 surrounded by a number of radially disposed die-cut flaps 13, each of these flaps being cut through the entire thickness of the pad along the radial lines 14 and hinged at one side as indicated at 15. In the particular embodiments illustrated in Figs. 1, 2 and 3, the flaps 13 are die-cut on the top face of the pad 10 and the cuts along the hinge lines 14 extend only through the top liner 16 and the corrugated reinforcement 17, leaving the bottom liner 18 uncut along the hinge line 15. However, it is not necessary to cut the pad along the hinge line 15 for even a portion of the thickness of the pad. If desired, this hinged line 15 may be scored instead of cut.

The above described functions of the flaps 13 for engaging the yarn package core, and for positioning the apex end of the core of one package in the base end of the core of the yarn package next above, are illustrated in Figs. 4 and 5 of the drawing. As shown in Fig. 4, the yarn package 19 is wound on a cone-shaped core or carrier 20, which has a base end 21 and an apex end 22. The latter extends through the center opening 12 for a short distance above the top face 16 of the yarn pad 10. Radially disposed around and engaging the apex end 22 are the flaps 13. They have been arcuately extended from their original cut position by the thrust of the apex end 22 through the center opening and grasp the periphery of the end 22 of the yarn package core. This prevents vertical movement of the yarn package.

In Fig. 5 there is illustrated two of the assemblies shown in Fig. 4 in cooperative arrangement, such as used in the shipping container. As shown therein, the apex end 23 of the cone 24 extends into the base end 25 of the cone 26. The flaps 13 of the yarn pad 10, located between the two cones, engage the apex end 23 of the lower cone 24 and are expanded sufficiently to make good contact with the inner wall of the upper cone 25 at the base end thereof as indicated at 27. These expanded flaps substantially span the space between the outer wall of the apex end 23 of the cone 24 and the inner wall of the base end of the partially telescoped cone 26. This arrangement prevents lateral displacement of the two, thus interconnected, yarn packages.

The use of the yarn pad 10 in a shipping container is more generally illustrated in Fig. 6 by a paperboard container 28 for shipping a number of the yarn packages 29, each yarn package containing a winding of yarn 30 and a conically shaped core 31. Each of the cones 31 rests on a yarn pad 10 and has its apex end 22 extending through the center hole 12 and held in place by the flaps 23 which surround each hole and which are thrust upwardly and outwardly when the apex 22 of the cone is inserted through the center hole as described above. This arrangement, as illustrated in Fig. 6, is repeated throughout the container wherein the yarn packages 29 are stacked vertically in a number of tiers and with the apex of one cone extending into the base of the cone next above, and, in effect, integrate the plurality of yarn packages into substantially a single body.

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The multi-ply paperboard illustrated in the drawings may be substituted by a single thickness or solid paperboard. In some instances, the solid board may prove advantageous as being more resistant to crushing forces and the flaps cut therein more resistant to deforming or tearing-off. These and various other modifications and changes may be made in the above described materials and arrangements within the scope of the present invention as indicated in the appended claim.

We claim:

In combination, a yarn package shipping container and a yarn package pad comprising a plurality of tiers of yarn packages with each package containing a conical core and a winding of yarn thereon and being stacked vertically one above the other so that the apex end of one yarn package core extends into the open base end of the yarn package core immediately above, said yarn package pad comprising a sheet of corrugated paperboard lined at both faces and with a plurality of regularly spaced circular openings therein fitting over the apex ends of the conical cores in said tiers for preventing vertical and lateral displacement of said yarn packages during shipment, with the base ends of the conical cores

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in said tiers resting on said paperboard sheet concentrically with respect to said openings, and a plurality of flaps disposed around each of said openings and defined by slits in said sheet radiating from said openings to the intersection of hinge lines formed by slits only in the top liner ply and corrugated wall of said corrugated paperboard in concentric relation about said openings, said hinge lines being positioned substantially under the base ends of said cores and said flaps being flared outwardly and engaging frictionally the periphery of said apex ends of said cores upon positioning of said yarn package pad about said cores.

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