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2,867,367

CORNER PACKING

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Fig:1.

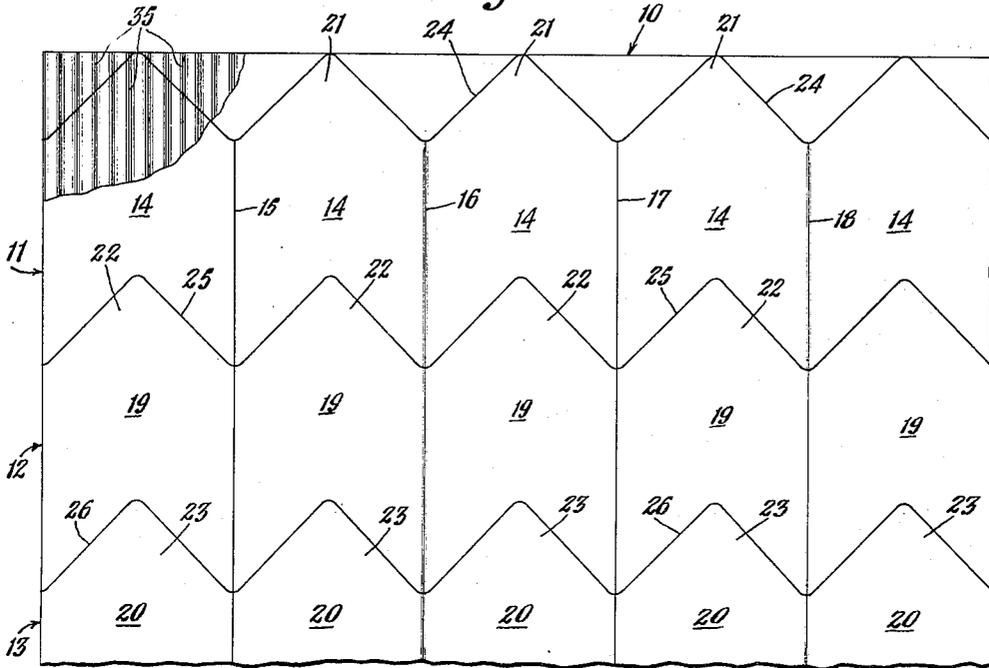


Fig:2.

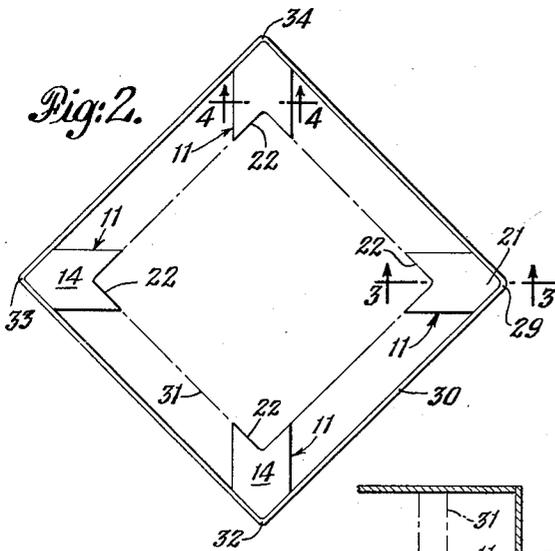


Fig:3.

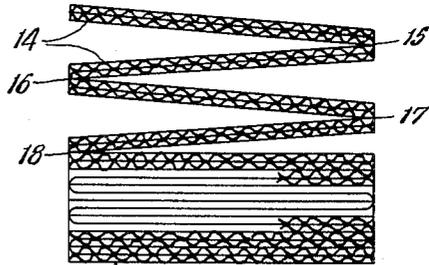
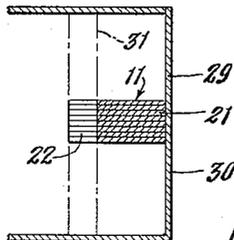


Fig:4.

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CORNER PACKING

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5 Claims. (Cl. 229—14)

This invention relates to the packaging arts, and more particularly to an improved corner packing for use in a shipping container, and the like.

In the packaging of heavy articles for shipment, it is customary to provide a cushioning space between the article to be shipped and the walls of the shipping container. This cushioning space serves to protect the article being shipped from damage during transit and also serves to position the article in the container. Where the article needs primary protection on its sides, rather than its top and bottom, such as for example, a rectangular fluorescent lighting fixture, the use of cushioning pads or packing located between the article and the upper and lower walls of the shipping container may be dispensed with. In such instance, "loose" packing such as straw or shredded paper, proves somewhat unsatisfactory since it tends to work its way between the packed article and the upper and lower walls of the shipping container, thus reducing the effectiveness of the packing at the sides of the article where it is most needed.

To overcome this difficulty, corner packings or "corner pads" have been developed which are constructed of solid or corrugated fibreboard and which are located in the corners of the shipping container in such manner as to position and support the packed article. The corner packings are customarily fabricated by cutting them out from large sheets of corrugated board material upon which have been laid out a plurality of blanks. The shape of the blank cut from a sheet of board material determines in large part the cost of manufacture since it governs the number of useable blanks which may be obtained from a single sheet. It is therefore apparent that a suitable design for a corner packing depends upon manufacturing considerations as well as ultimate performance.

Accordingly, it is an object of this invention to provide a blank for a container corner packing which employs a minimum of material and which may be fabricated from large sheets of material with little waste.

It is a further object of this invention to provide a blank for a container corner packing which in use adds great strength to the corners of the container and which firmly positions and supports the packed article.

Briefly, the invention contemplates a blank for a container corner packing and the like, which comprises an elongated strip of flat sheet material, such as corrugated board, having a series of panels formed thereon by a plurality of parallel transverse lines. Each of the panels formed on the blank has an extended portion at one end, which may be substantially right angled, and a cut-out portion at the other end, which may also be substantially right angled. The blank thus formed, is adapted to be reversely folded along the parallel transverse lines forming the panels, such that it forms an accordion pleated corner packing having a container corner engaging portion and an article engaging portion. The container corner engaging portion of the corner packing is formed by the extended portions of the

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series of panels and the article engaging portion is formed by the cut-out portions of the series of panels. The accordion pleated construction of the corner packing and the use of extended and cut-out portions on each panel of the blank, permits the blank to be fabricated with a minimum of waste from suitable board material.

When flat corrugated board is employed for the blank, the parallel transverse lines forming the series of panels are arranged to be parallel to the corrugations of the board. This permits the longitudinal axes of the corrugations in the folded blank, to be substantially parallel to a line bisecting the angle formed by the container corner engaging portion of the corner packing, thus adding great strength to the corners of the container.

These and other objects, advantages and features of the invention, will become apparent from the following description and drawings which are merely exemplary.

In the drawings:

Fig. 1 is a top plan view of a portion of a sheet of double-wall corrugated board material having a plurality of blanks laid out thereon in accordance with the invention, a section of the outer flat liner of the corrugated board material being broken away to show the direction of the corrugations of the corrugated members;

Fig. 2 is a top plan view of a shipping container with the cover removed, showing an article held in place by four corner packings formed from the blanks shown in Fig. 1, the article so held, being shown by dot-dash lines;

Fig. 3 is a diagrammatic sectional view taken along the line 3—3 of Fig. 2, the cover of the shipping container being shown in closed position; and

Fig. 4 is a diagrammatic sectional view taken along the line 4—4 of Fig. 2, the corner packing shown, being only partially folded for clarity of illustration.

Referring first to Fig. 1 of the drawings, there is shown a portion of a sheet 10 of double-wall corrugated board material having blanks 11, 12 and 13 formed thereon. While double-wall corrugated board material is employed in the illustration, it is to be understood that any suitable material such as solid board or double-faced corrugated board could also be utilized. Blank 11 comprises a series of panels 14 formed by a plurality of parallel transverse lines 15, 16, 17 and 18. The parallel transverse lines 15—18 also form a series of panels 19 which make up blank 12 and a series of panels 20 which make up blank 13. As will be later explained, the parallel transverse lines 15—18 may comprise several suitable combinations of cut and fold lines, but, as illustrated in Fig. 1, they comprise cut lines 15 and 17 and fold lines 16 and 18.

Each of the panels 14 of blank 11 comprises an extended portion 21 and a cut-out portion 22 which may, as shown, be substantially right angled in shape. It will be noted that the cut-out portions 22 of panels 14 coincide with the extended portions of panels 19 which make up blank 12. Similarly, the cut-out portions 23 of panels 19 coincide with the extended portions of panels 20 which make up blank 13. The individual blanks 11, 12 and 13 are separated and defined by a series of "saw-tooth" cut lines 24, 25 and 26. The saw-tooth cut lines define the cut-out portion of each panel and the extended portion of the corresponding panel in the next adjacent blank. It is believed apparent therefore, that the edges forming the extended portion of each panel are parallel to the corresponding edges forming the cut-out portion. Similarly, the apex of the extended portion of a panel and the apex of the cut-out portion of the same panel must lie on a line which is parallel to the transverse lines 15—18.

As may be seen in Figs. 2, 3 and 4 of the drawings, when the blanks 11, 12 and 13 are reversely folded along the

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parallel transverse lines 15-18 they form accordion pleated corner packings. Since each of the series of panels making up a blank is of identical size and shape, when the blank is reversely folded, it forms a corner packing of the same shape as an individual panel, but of a thickness depending upon the number of panels in the blank. In Fig. 2, for example, blank 11 is shown completely folded and placed in the corner 29 of a shipping container 30. The extended portions 21 of the series of panels 14 making up blank 11 are seated in the corner 29 to form a container corner engaging portion of the corner packing. The cut-out portions 22 of the panels of blank 11 are shown as receiving one corner of a packed article 31 to form an article engaging portion of the corner packing. Corners 32, 33 and 34 of the shipping container 30 also contain corner packings like that shown in corner 29 and similarly, respectively receive the remaining corners of the packed article 31.

It is thus seen that the article 31 is securely positioned in the shipping container 30, since substantial horizontal movement of the article is prevented by the corner packings employed. Furthermore, the corner packings keep the packed article 31 spaced a fixed distance from the sides, ends and corners of the container 30 so that the article is protected from external forces applied to the upright walls of the container. As hereinbefore explained, if protection is sought for the top and bottom of the packed article, additional packing must be resorted to.

Where maximum protection and strength is desired, the number of panels making up a blank may be made sufficiently large to produce a corner packing of a height substantially equal to the height of the shipping container enclosing the packed article. As seen in Fig. 3, therefore, the corner packing formed by blank 11 may have a sufficient number of panels 14 to completely fill the shipping container 30 from top to bottom, thus providing protection for the whole height of the article 31. If the nature of the packed article permits, however, it may be more economical to employ two separate corner packings with a combined height less than the height of the container, one at the top and the other at the bottom of the corner, with a spacer, or cell, formed of folded corrugated board placed between the separate corner packings.

Where the blank contains a sufficient number of panels to form a corner packing of a height equal to the container height, it is usually not necessary to secure the panels together by gluing or stitching to keep the blank folded. In such a case, the top and bottom of the container serve to keep the blanks folded. If corner packings are employed which have a combined height that is less than the height of the shipping container, then it is possible to keep the blanks forming the packings, folded by means of glue applied to adjacent abutting panels. Alternatively, a corrugated band or "sleeve" of the same shape as the corner packing may be employed. The band then may be fastened by staples or other suitable means.

As an inspection of Fig. 4 indicates, the blank 11 may be folded on the parallel transverse lines 15-18 if the lines 15-18 are alternate cut and fold lines. In such instance, the folded portions of the blanks formed at the cut lines 15 and 17 will appear on one side of the folded blank and the folded portions at the fold lines 16 and 18 will appear on the other side of the folded blank. Such an arrangement of cut and fold lines may be profitably employed to fabricate the blanks 11, 12 and 13 from a single sheet 10 of board material, since all the cutting and scoring operations need be performed on only one side of the sheet.

However, such procedure usually results in a corner packing of non-uniform thickness, since the folded portions at the cut lines stack together more closely than the folded portions at the fold lines. Therefore, if de-

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sired, the sheet 10 could have cut lines on both the faces thereof, so that the corner packings formed by the folded blanks would each be of uniform height. For example, cut lines 15 and 17 would remain cut lines in such an arrangement, while lines 17 and 18 could be made cut lines on the other face of sheet 10, thereby eliminating the necessity for scoring the sheet to produce fold lines. In a similar manner the sheet 10 could be scored on both faces to produce only fold lines, thereby eliminating the cutting or slitting operation necessary to produce the cut lines. It is therefore apparent that several combinations of cut and fold lines are possible to make a blank for an accordion pleated corner packing according to the invention.

Where corrugated board is employed as the material from which the blanks are made, it has been found that the parallel transverse lines 15-18 should be placed parallel to the corrugations of the board. Thus, in Fig. 1 of the drawing, the corrugations 35 are shown as being parallel to the transverse lines 15-18. When this procedure is followed, it is apparent that when the blanks are folded on the transverse lines, the longitudinal axes of the corrugations will be parallel to a line bisecting the extended portions 21 of the panels 14. Since the extended portions 21 are shaped to fit the corners of a shipping container, it is seen that the corrugations will be oriented in a direction that will enable the packing to provide maximum protection for the packed article and also to give added strength to the corners of the container.

From the foregoing description, it is believed obvious that the extended portions of the panels forming the blank must be of a shape conforming to the corners of the shipping container used, while the cut-out portions of the panels must be of a shape conforming to the portion of the packed article which they engage. Where the shipping container and the packed article are both of rectangular cross-section, the arrangement of Fig. 1 will permit the fabrication of the greatest number of useable blanks from a single sheet of board material. This is due, in part, to the fact that the extended portions of the panels of one blank fit, or "dove-tail," into the cut-out portions of the panels of the adjacent blank. Accordingly, there would be no waste between adjacent blanks, and the only waste on a rectangular sheet of board material would be at the upper and lower edges of the sheet. However, packed articles with cross-sections that are other than rectangular may be accommodated by the accordion pleated corner packing of the invention, by simply changing the configuration of the cut-out portions of the panels, to conform to the shape of the portion of the article engaged. This does not permit of maximum economy, however, since the extended portions of the panels of one blank would not fit into the cut-out portions of the panels of the adjacent blank.

It should be apparent that modifications may be made in the construction and arrangement of the corner packing described herein, without departing from the spirit of the invention, except as defined in the appended claims.

I claim:

1. A blank for a container corner packing and the like, comprising an elongated strip of flat sheet material, said strip having a series of panels formed thereon by a plurality of parallel transverse lines, each of said panels having a substantially right-angled extended portion at one end thereof and a substantially right-angled cut-out portion at the other end thereof, the apex of said extended portion and the apex of said cut-out portion lying on a line which is parallel to said transverse lines, said strip being adapted to be reversely folded along said parallel transverse lines to form an accordion pleated corner packing having a container corner engaging portion formed by the extended portions of said panels and an article engaging portion formed by the cut-out portions of said panels,

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2. A blank for a container corner packing and the like, comprising an elongated strip of flat corrugated board material, said strip having a series of panels formed thereon by a plurality of parallel transverse lines which are also parallel to the corrugations of said board material, each of said panels having a substantially right-angled extended portion at one end thereof and a substantially right-angled cut-out portion at the other end thereof, the apex of said extended portion and the apex of said cut-out portion lying on a line which is parallel to said transverse lines, said strip being adapted to be reversely folded along said parallel transverse lines to form an accordion pleated corner packing having a container corner engaging portion formed by the extended portions of said panels and an article engaging portion formed by the cut-out portions of said panels and wherein the longitudinal axes of said corrugations are substantially parallel to a line bisecting the angle formed by said container corner engaging portion.

3. A blank for a container corner packing and the like, comprising an elongated strip of flat sheet material, said strip having a series of panels formed thereon by a plurality of parallel transverse lines, each of said panels having a substantially right-angled extended portion at one end thereof and a substantially right-angled cut-out portion at the other end thereof, the apex of said extended portion and the apex of said cut-out portion lying on a line which is parallel to said transverse lines, the edges forming the extended portion of each panel being parallel to the corresponding edges forming the cut-out portion, said strip being adapted to be reversely folded along said parallel transverse lines to form an accordion pleated corner packing having a container corner engaging portion formed by the extended portions of said panels and an article engaging portion formed by the cut-out portions of said panels.

4. A blank for a container corner packing and the like, comprising an elongated strip of flat corrugated board material, said strip having a series of panels formed thereon by a plurality of parallel transverse lines which are also parallel to the corrugations of said board material, each of said panels having a substantially right-

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angled extended portion at one end thereof and a substantially right-angled cut-out portion at the other end thereof, the apex of said extended portion and the apex of said cut-out portion lying on a line which is parallel to said transverse lines, the edges forming the extended portion of each panel being parallel to the corresponding edge forming the cut-out portion, said strip being adapted to be reversely folded along said parallel transverse lines to form an accordion pleated corner packing having a container corner engaging portion formed by the extended portions of said panels and an article engaging portion formed by the cut-out portions of said panels and wherein the longitudinal axes of said corrugations are substantially parallel to a line bisecting the angle formed by said container corner engaging portion.

5. A blank for a container corner packing and the like, comprising an elongated strip of flat corrugated board material, said strip having a series of panels formed thereon by a plurality of parallel transverse lines, each of said panels having a corner-engaging projection at one end thereof, said projection being located midway between said parallel transverse lines, and a cut-out portion at the other end thereof, the corrugations of the board material being substantially parallel to a line connecting the centers of said projection and said cut-out portion, said strip being adapted to be reversely folded along said parallel transverse lines to form an accordion pleated corner packing having a container corner engaging portion formed by the projections of said panels and an article engaging portion formed by the cut-out portions of said panels and wherein the corrugations are substantially parallel to a line bisecting the angle formed by said container corner engaging portion.

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