SHOCK-PROOF CARTON

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Application January 12, 1953, Serial No. 330,796

10 Claims. (Cl. 229—38)

The present invention relates to paper receptacles, such as boxes or cartons constructed from cardboard blanks, and, more particularly, to shock-proof or cushioned boxes for packaging articles which are of a fragile nature and require special packaging to protect the same, these boxes being an improvement over the type disclosed in United States Patents 2,513,902 and 2,533,070.

Accordingly, an object of the present invention is to provide a box of the foregoing character which has an inner sleeve adapted to receive articles of various shapes and cross-section.

Another object is to provide such a box wherein the inner sleeve is expansible and is adapted to adjust itself to snugly retain the packaged article.

Another object is to provide such a box wherein the inner sleeve has a self-adjusting pocket for receiving a portion of the article and retaining the same against movement endwise within the box.

Another object is to provide such a box which can be constructed from a single blank in a simple and inexpensive manner.

A further object is to provide such a box which can be preassembled and can be shipped in collapsed condition to the packer.

A still further object is to provide such a box which is set up for use from its collapsed condition with a minimum of effort while inserting the article therein.

Other and further objects will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawing, forming a part of the specification, wherein:

Fig. 1 is a plan view of a blank in its flat condition from which the box in accordance with the invention is constructed.

Fig. 2 is a cross-sectional view of the box in its set-up position prior to the insertion of an article, this view being taken about midway between the ends of the box.

Fig. 3 is a sectional view taken along the line 3—3 on Fig. 2.

Fig. 4 is a view similar to Fig. 2 with the article inserted in the box.

Fig. 5 is a cross-sectional view of the box shown in a collapsed state.

Referring to the drawing and more particularly to Fig. 1 thereof, there is shown a box blank stamped or cut out of a sheet of cardboard or the like which has a series of ten successive panels P1, P2, P3, P4, P5, P6, P7, P8, P9, and P10 integrally connected along parallel fold lines or creases 15, 16, 17, 18, 19, 20, 21, 22, 23, respectively. The first, second, and third panels, P1, P2, and P3, respectively, are provided with conventional end flaps for closing the ends of the box, and the first and/or fifth panels are provided with an adhesive coating 24 for securing the same together upon assembly of the box in the manner described hereinafter. The ends of the sixth panel P6 may be recessed at 25 and the ends of the ninth panel P9 may converge to facilitate insertion of an article into the box.

In accordance with one of the features of the invention a flap F1 is cut out of the seventh and eighth panels, P7 and P8, respectively, and is foldably connected to the seventh panel along a fold line 26 parallel to and intermediate the fold lines 20 and 21; and a second flap F2, narrower than flap F1, is cut out of the eighth panel P8 and is foldable along the fold line 22. The free edges of the flaps F1 and F2 face each other and are defined by severing the panel P8 along a line 27. It will be appreciated that the location of the flaps F1 and F2 could be reversed with the flap F1 cut out of the seventh and eighth panels and foldably connected to the eighth panel and with the flap F2 cut out of the seventh panel.

In Figs. 2 and 3, the blank is shown folded and secured to provide a box, rectangular in cross-section, which has inner and outer sleeves constituted in the manner about to be described.

The outer sleeve comprises the first five panels at one end of the blank, namely, panels P1, P2, P3, P4, and P5, with the inside of the first panel P1 secured to the outside of the fifth panel P5.

The inner sleeve comprises the first five panels at the other end of the blank, namely, panels P6, P7, P8, P9, and P10, which are somewhat narrower than the panels P1, P2, P3, and P4. The sixth panel P6 extends diagonally from the first panel P1 to the second panel P2 and is spaced therefrom. The seventh panel P7 is adjacent the second panel P2 and the eighth panel P8 is adjacent the third panel P3 with the fold lines 16 and 21 disposed in a common plane extending diagonally across the box. The ninth panel P9 is opposite and in converging relation with the sixth panel P6 and extends diagonally from the third panel P3 to the fourth panel P4 and is spaced therefrom. The tenth panel P10 is adjacent the fourth panel P4 and is relatively movable therewith. However, in some applications it may be desirable to secure the tenth panel P10 to the fourth panel P4.

Where the panels are so arranged, the flap F1 extends diagonally from the second and seventh panels towards the third and eighth panels, and the flap F2 extends in the opposite direction with its outer surface in sliding contact with the inner surface of the flap F1 to retain the latter in its diagonal position. While the flap F2 is considerably narrower than the flap F1, it is still of a width sufficient to so retain the flap F1, when the flaps are forced outwardly upon insertion of the article.

In Fig. 4, the box is shown with an article A inserted therein, which article is schematically represented in broken outline. This article is shown as having a cylindrical outer contour, but it will be appreciated from the following description that it could be polygonal or irregular in shape. The article engages the sixth and ninth panels which are usually bowed outwardly, thereby to snugly retain the article in engagement at opposite sides and out of contact with the outer sleeve or the box proper.

The article also engages the flaps F1 and F2, which slide relatively to provide an expansible pocket adapted to receive a portion of the article to hold the article out of contact with the outer sleeve and at the same time to prevent lengthwise movement of the article in the box.

By reason of the converging relation of the sixth and ninth panels, the article is urged towards the pocket. Also, since the sixth, seventh, eighth, ninth, and tenth panels are not secured to the outer sleeve, the inner sleeve constituted by these panels can expand and adjust itself
to provide a resilient-like support for cushioning the article against shock.

It will also be appreciated that the box can be folded and glued, as shown in Fig. 5, by the manufacturer thereof and can then be shipped in a flattened or collapsed state with the panels P2 and P3, respectively, superimposed. This is made possible because the inner sleeve floats in the outer sleeve to adjust itself in flat condition and because of the relation of the fold lines 16 and 21 which provide for folding of the outer and inner sleeves along a common line.

When the packer receives the box, it can be set up simply by applying pressure, either manually or by automatic machinery, at the fold lines 16 and 18 from opposite directions inwardly to sufficiently open the box for reception of the article, which, upon insertion, causes the outer sleeve to assume its rectangular shape. The recessed or converging ends of the panels P6 and P9 provide a funnel-like opening which facilitates insertion of the article without damaging the inner sleeve. The continued downward cut 30 (converging ends) on panel P9 and the reduced panel P10 permits the ready insertion of the tucks 31 in closing the carton.

From the foregoing description, it will be seen that the present invention provides a simple, economical, practical and effective shock-proof box or carton which is readily manufactured and assembled, can be shipped in collapsed condition, and practically set itself up for reception of the article.

As various changes may be made in the form, construction, and arrangement of the parts herein, without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matters are to be interpreted as illustrative and not in any limiting sense.

What is claimed is:

1. A collapsible shock-proof box, rectangular in cross-section, formed from a folded single blank comprising a series of ten successive panels integrally connected along parallel fold lines to form inner and outer sleeves, the outer sleeve comprising five panels adjacent one end of said blank, with the inside of the first panel being secured to the outside of the fifth panel, and the inner sleeve comprising five panels adjacent the other end of said blank, the inner sleeve panels being narrower than the first four outer sleeve panels, the sixth panel extending from the first panel to the second panel and being spaced from the fold line between the first and second panels, the seventh panel lying alongside the second panel and the eighth panel lying alongside the third panel, flap means formed out of the seventh and eighth panels and extending from the second panel to the third panel, said flap means being spaced from the fold line between the seventh and eighth panels and being arranged to provide an expandible pocket adapted to receive and be engaged by an article packed in the box, the ninth panel extending from the third panel to the fourth panel and being spaced from the fold line between the third and fourth panels, and the tenth panel lying alongside the fourth panel and relatively movable therewith.

2. A box according to claim 1 wherein said flap means include a flap cut out of said seventh and eighth panels between the ends thereof and foldably connected to one of said panels along a fold line parallel to and spaced from the fold line between said seventh and eighth panels.

3. A box according to claim 2, wherein said flap means includes a second flap cut out of and foldably connected to the outer panel.

4. A box according to claim 3, wherein said second flap is narrower than said first flap.

5. A box according to claim 1, wherein said flap means includes a flap cut out of said seventh and eighth panels between the ends thereof and foldably connected to said seventh panel along a fold line parallel to and spaced from the fold line between said seventh and eighth panels.

6. A box according to claim 5, wherein said flap means includes a second flap cut out of said eighth panel and foldably connected thereto along the fold line between said eighth and ninth panels.

7. A box according to claim 6, wherein said flaps are in overlapping relation and relatively movable.

8. A box according to claim 7, wherein the inside of said first flap engages the outside of said second flap.

9. A box according to claim 1, wherein said sixth and ninth panels are disposed in converging relationship with respect to each other, whereby the article to be packed therein is more securely cushioned.

10. A box according to claim 9, wherein the distance between the sixth and ninth panels adjacent the flap means is greater than the distance between the sixth and ninth panels adjacent the first and fourth panels, whereby the article to be packed therein is urged toward said flap means and prevented from contacting the first and fourth panels.

References Cited in the file of this patent

UNITED STATES PATENTS
2,611,529 Currivan Sept. 23, 1952
2,714,981

FOREIGN PATENTS
241,097 Great Britain Oct. 15, 1925