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2,909,312

TEAR STRIP BOX

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2 Sheets-Sheet 1

Fig. 1

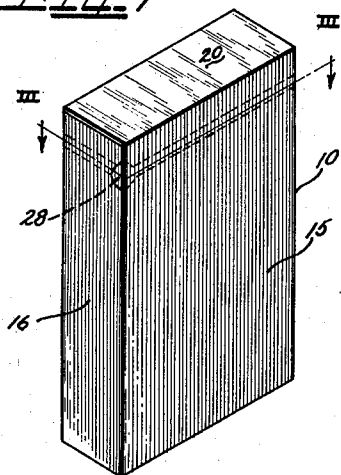


Fig. 3

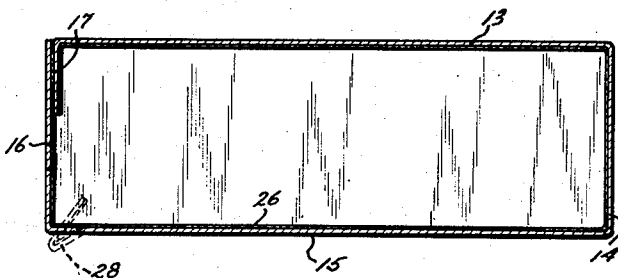


Fig. 2

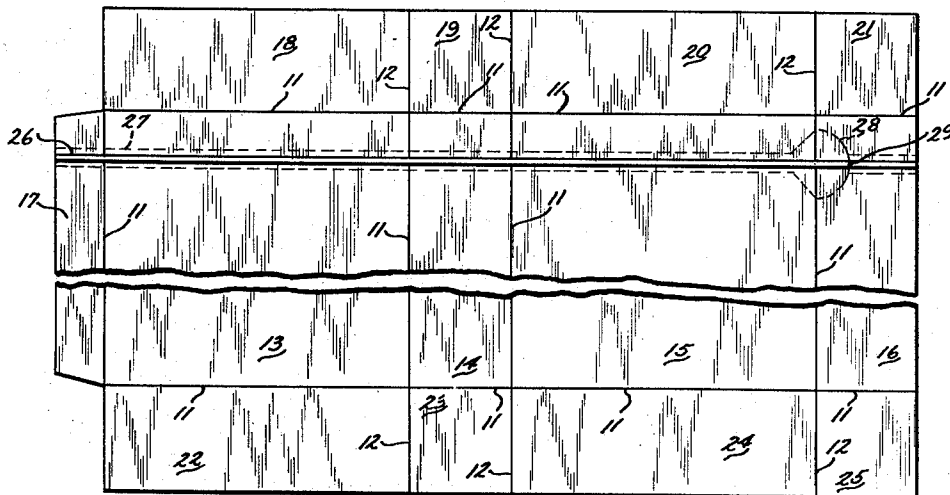
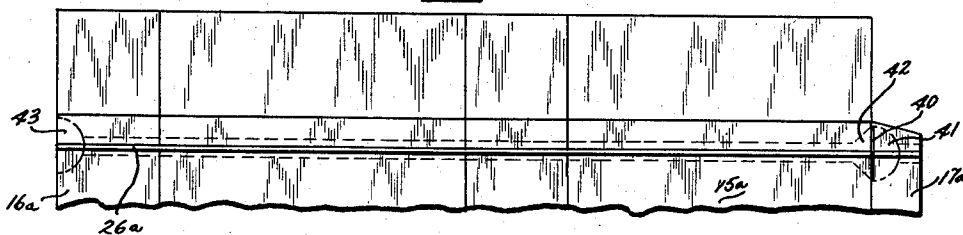


Fig. 4



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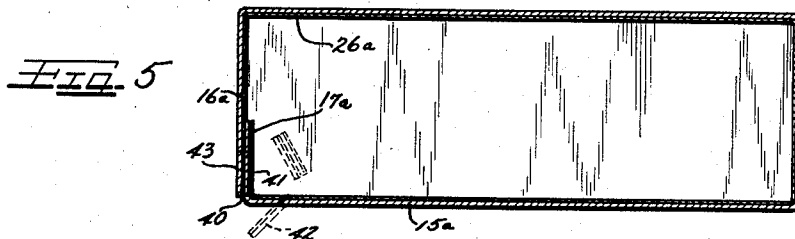
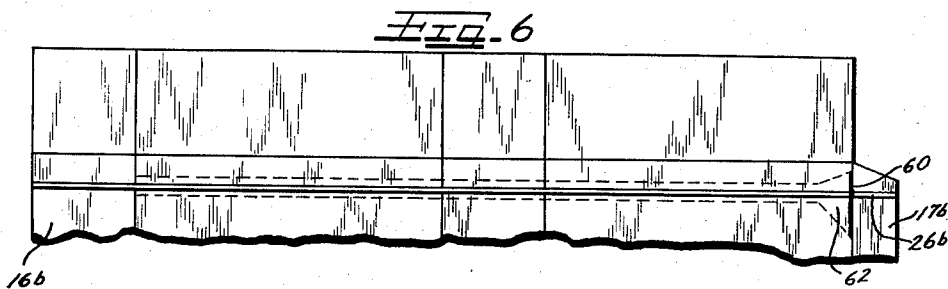
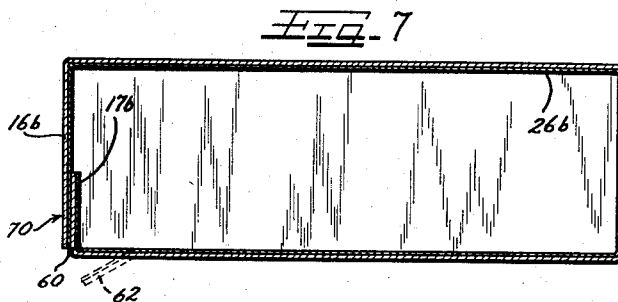
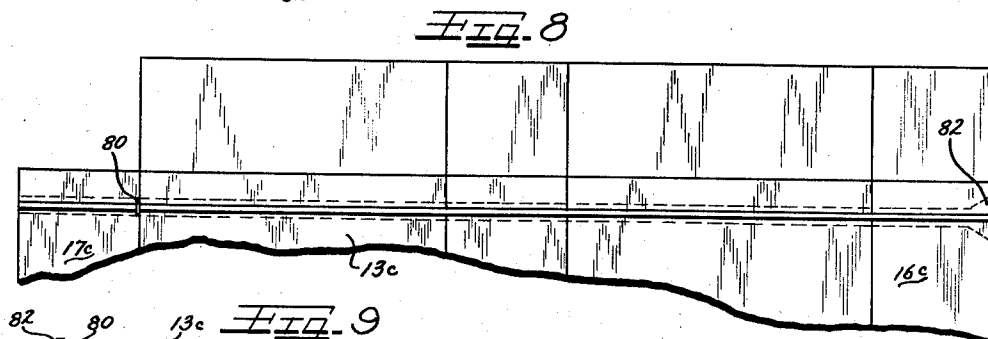
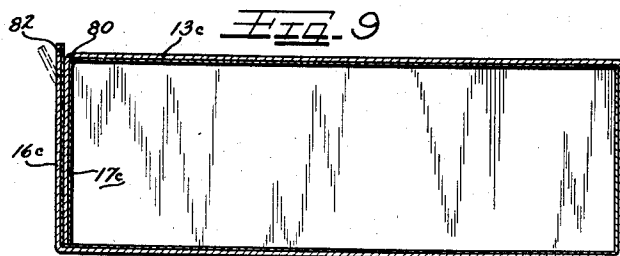
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TEAR STRIP BOX

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2 Sheets-Sheet 2



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2,909,312

## TEAR STRIP BOX

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Application October 9, 1956, Serial No. 614,850

3 Claims. (Cl. 229—51)

This invention relates to a carton or box having an integral ripper.

Specifically, this invention relates to a box which has integral means for removing the top of same. This integral means consists of a tear-strip portion of the box defined by perforations and underlaid by a continuous tear tape.

Heretofore, when tear tapes have been used as a part of the means to open a box, it has been the practice to permit the tear tape to project outwardly from the carton. Providing this projecting tape imposes certain production difficulties and more important, such a tape presents an appearance which is considered objectionable. Furthermore, where tear tapes have been used, such as on a rectangular box, five (5) pulls have usually been required to completely sever the top. Since this represents one more pull than there are sides to the box, one additional pull has heretofore been needed which preferably should be eliminated.

The instant invention provides a folding box having a self-contained opening means which is composed of a tear tape secured throughout the interior length of the blank which makes up the box. The tear tape is cut intermediate its ends to form internal ends, or in effect, two abutting tapes. These intermediate ends cooperate with the end of the tab or with the corner of the box under the tab which is part of the box, so that the top of the box may be removed by four motions or pulls of the tear tape. In the preferred embodiment, perforations straddle the tear tape and define a tab integral with the box wall. Means are also included whereby the end of the tab or the tab itself is made generally available or accessible for pulling. Since the overlapping portion or glue flap panel of the box is secured to the wall which it overlies or underlies, that portion of the tear strip which lies in the glue flap panel will be removed in the same operation that the underlying or overlying wall is torn. Thus the initial free ends cooperate in a manner permitting the double wall portion of the box to be opened in a single operation. Various means of accomplishing the foregoing are taught in this specification.

Accordingly, it is an object of this invention to provide a folding box having an integral tab and ripper strip which is underlaid by a tear tape, which tear tape does not project beyond either end of the tear strip.

A further object of this invention is to provide a tear strip design for a folding box which permits the removal of the top in four pulls.

Another object of this invention is to provide a ripper design for a folding box where a tear tape is used, said tear tape being capable of being applied continuously from a roll of such tape against a roll of heavy paper from which the carton blanks are formed.

It is a further object to provide an opening means for a carton wherein the top of the carton is removed without damage to the remainder of the carton.

It is also an object to provide a design for a box opener which is inexpensive to manufacture, simple in design,

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and which will perform over a wide range of material and tear tapes.

Other objects, features and advantages of this invention will be apparent from the following detailed description of the attached sheets of drawings, which, by way of four embodiments, illustrate the invention.

On the drawings:

Figure 1 is a perspective view of a box made according to this development;

Figure 2 is an inside plan view, partially broken away, of the blank from which the box of Figure 1 is constructed;

Figure 3 is an enlarged sectional view taken along line III—III of Fig. 1;

Figures 4 and 5 are plan and cross-sectional views of a first modification of this invention;

Figures 6 and 7 are plan and cross-sectional views of a second modification of this invention; and

Figures 8 and 9 are plan and cross-sectional views of a third modification of this invention.

The box of this invention is generally illustrated in Figure 1 and indicated by the numeral 10, in its assembled form. Referring to Figure 2, a single unitary blank is scored at lines 11 to produce fold lines, and is cut at lines 12 up to the score lines. These fold lines and cuts define four wall panels 13, 14, 15 and 16 together with a glue flap panel 17 each hinged together along their longitudinal edges. Also defined are extensions 18 to 25 inclusive which are hinged to opposite end edges of the panels. After an appropriate adhesive has been applied to the glue flap panel 17, that flap panel and the panels 13 to 16 are folded along the vertical score lines to form a rectangular shape, the end extensions 18 to 25 inclusive being folded over in pairs and secured. Extensions 18 to 21 inclusive comprise the top and extensions 22 to 25 inclusive comprise the bottom of the box. Secured, such as by adhesive, to the inner face of the flap panel 17 and to each of panels 13 to 16, is a tear tape 26. It will be noted that this tear tape extends the entire length of the blank and is firmly secured thereto by any convenient method. Preferably the tape carries its own adhesive and is pressure sensitive. The blank is also provided with spaced aligned perforations 27 which are parallel to and adjacent to the tear tape. These perforations diverge in panel 15 and converge in panel 16 to form a pull tab 28. It is to be noted that the perforations 27 are also present in panel 16 to the right of tab 28. Most important, the perforation which defines the right end or leading edge of tab 28 extends all the way across the space between the parallel perforations 27. At the intersection of this perforation with the tear tape 26, the tear tape is also cut. A preferred method of manufacture is to apply the tear tape 26 from a continuous roll onto the blank, cutting the tape and the paper at the same time to form the blank. When the perforation 29 cuts the end or leading edge of the pull tab, in a preferred method of manufacture that perforation 29 also cuts the tear tape to provide intermediate ends. It can be seen that the same structural result is obtained if two tear tapes are used, the first lying to the left of perforation 29 and the second lying to the right of perforation 29.

Referring to Figure 1, when a force is applied, as by the finger, against the semi-circular portion of tab 28, the tab which is integral with the box will separate from the box along the perforation lines; thereafter a tear strip defined by all of the perforations and reinforced by the tear tape is produced by tugging or pulling at the tab 28. When the tab 28 has been separated from the panels of the box as shown in Figure 3, four distinct pulls of the tab will remove the entire cover. On the fourth pull, the tear strip lying in panel 16 and in glue flap panel 17 will tear

simultaneously, without parting at the joint. Thus this structure readily negotiates the joint.

Referring to Figure 4, a modification of the structure illustrated in Figure 2 is indicated. It will be noted that in general the fold lines and cut or slit lines are the same. So also the tear tape is attached in a similar manner and a tab having similar cuts or perforations is provided. However, it will be noted that an additional cut is provided transverse to the central portion of the tab at 40. I have exaggerated the width of this cut so as to distinguish between that cut and the score or fold line which coincides with it. This additional transverse cut, produces a knock-out 41 and a tab 42. It can be seen that this type of structure may be provided at any one of the four vertical score lines. However, when the cut 40 is placed in the score line which defines the hinge between the glue tab and the adjacent panel, a second knock-out 43 is also required in the panel which is secured to the glue flap panel 17a. Each of the knockouts 41 and 43 are partially defined by one perforation, identical to perforation 29 of Fig. 2, which extends transversely across the width of the tear strip and which cuts the tear tape, the tear tape having previously been attached. It will be seen that a similar structure would be attained by using four pieces of tear tape, one being secured to knock-out 43, one running the general length of the blank, one secured to knock-out 41 and the fourth secured to the glue flap panel. Thus in the structure illustrated, one tear tape has been severed by the transverse perforations at three places to produce four tear tapes which abut one another on the back of the tear strip.

Referring to Figure 5, it can be seen that when an external force is applied at knock-out 43, that knock-out being securely attached, such as by gluing, to knock-out 41, such pair of knock-outs will fall to the interior of the box, thus exposing the leading edge of tab 42 which may now be deflected outward as illustrated in broken lines. From this condition, four distinct pulls, one for each of the four sides, will completely sever the box top from the box. Again it will be noted that the various ends of tear tape produced by the perforations and the original ends cooperate to produce one continuous tear strip having no more than four legs.

Referring to Figure 6, a generally similar blank is illustrated but with these changes. There are no perforations in the end panel 16b nor in the glue flap panel 17b. Again a single perforation 60 defines an end of tab 62. I have exaggerated the width of perforation 60 for the sake of clarity since it coincides with the fold line dividing the glue flap panel 17b from the adjacent panel. By this structure, a tab end is presented which may have a relatively longer leading edge, the omission of the perforations serving to restore box strength lost by lengthening the edge of the tab.

Referring to Figure 7, when force is applied at a point indicated by reference numeral 70 at the edge of panel 16b adjacent to tab 62, that portion of the panel together with the glue flap will bow or deflect inwardly slightly thereby exposing the leading edge of tab 62 so that it may be bent outward by the thumb or forefinger. The tab 62 readily deflects as shown in broken lines in Figure 7, thus permitting severing of the perforated tear strip along the broken lines indicated in Figure 6. As in the other structures herein, after three distinct pulls, three of the sides will be severed and the cover may then be hinged if so desired. A fourth distinct pull will nevertheless, owing to the strength of the tear tape, completely sever the top. Since panel 16b is securely glued to the glue flap panel 17b, the glue flap portion of the tear strip will be severed by the same pull that severs the top from panel 16b. Thus it is noted that perforation 60 produces ends in the tear tape 26b which cooperate to permit the opening of the double thickness end in a single pull.

Referring to Figures 8 and 9, a third modification of this invention is illustrated. In this form, in panel 16c

there is a tab 82 jointly defined by the perforations and by an extension of the blank itself. At the fold line dividing panel 13c from glue flap panel 17c, a transverse perforation 80 is provided across the tear strip and tear tape. Again I have exaggerated the width of this perforation so as to distinguish it from the fold line. As is shown in Figure 9, glue flap panel 17c is positioned on the inside of the box and panel 16c is securely glued to it on the outside. Since tab 82 projects outwardly of the plane of panel 13c, it may be deflected angularly as shown in broken lines in Figure 9, thereby readying it for the four distinct pulls needed to remove the top as before described. Again, by having an intermediate transverse cut of the tear tape and strip, it is possible to remove the box in four distinct pulls, the tear tape underlying each of the four panels and the glue flap panel.

It will be seen that the glue flap panel 17 of Figure 3, the glue flap panel 17a of Figure 5, and the glue flap panel 17b of Figure 7, are shown secured to the inside of panel 16, 16a, and 16b respectively. Of necessity, the gluing must include a portion of the flap panels underlaid by the tear tapes. If desired, these glue flap panels may be attached to the outside of the end panel without adversely affecting the ripping of the tear strip. Such a modification of the Figures 8 and 9 structure may also be made by lengthening the cut or perforation 80 to exceed the length of the leading edge of tab 82, and also widening it to accommodate the material's thickness, whereby tab 82 would project through a perforation or hole 80.

Thus the instant invention provides a folding box which has a self-contained tear strip having a flush tear tape secured internally throughout the length of the blank which makes up the box. Each of the tear tapes illustrated in the preferred form and in the various modifications has at least one intermediate transverse cut to form internal ends, or in effect forming two or more abutting tapes. It has been shown how these additional or intermediate ends cooperate with other structure to enable the cover to be removed utilizing only a single pull for the portion having a double thickness. Moreover, the tear tape is entirely invisible when the box has not been opened.

It will be understood that further modifications and variations may be effected without departing from the scope of the novel concepts of the present invention, but it is understood that this application is to be limited only by the scope of the appended claims.

I claim as my invention:

1. A ripper structure for a box, the box being made from a unitary blank and having a joint comprising a flap panel disposed in underlying flatwise relation to a wall panel thereof and having an area bonded thereto, comprising in combination: an interiorly exposed tear tape secured to the inner face of the blank and extending co-extensively along the entire length of the blank transversely to the joint and through said bonded area; a tab overlying said tear tape, integral with and formed from said blank by perforations, and having a transverse edge defined by one of said perforations which extends completely through the box and completely through said tear tape transversely intermediate its length at a point therealong registering with a crease in the blank by which said flap panel is defined and is integrally hinged, whereby the box may be completely ripped at its perimeter by a generally encircling pulling movement of substantially 360° applied to said tab.

2. A ripper structure for a box, the box being made from a unitary blank and having a joint comprising a flap panel disposed in underlying flatwise relation to a wall panel thereof and having an area bonded thereto, comprising in combination: an interiorly exposed tear tape secured to the inner face of the blank and extending co-extensively along the entire length of the blank transversely to the joint and through said bonded area; a tab overlying said tear tape, integral with and formed from said blank by perforations, and having a transverse edge

defined by one of said perforations which extends completely through the box and completely through said tear tape transversely intermediate its length at a point therealong registering with a crease in the blank by which said flap panel is defined and is integrally hinged, said transverse edge of said tab being disposed in slightly extending relation to a corner of the box, whereby the box may be completely ripped at its perimeter by a generally encircling pulling movement of substantially 360° applied to said tab.

3. A ripper structure for a box, the box being made from a unitary blank and having a joint comprising a flap panel disposed in underlying flatwise relation to a wall panel thereof and having an area bonded thereto, comprising in combination: an interiorally exposed tear tape secured to the inner face of the blank and extending co-extensively along the entire length of the blank transversely to the joint and through said bonded area; a tab overlying said tear tape, integral with and formed from said blank by perforations, and having a transverse edge defined by one of said perforations which extends completely through the box and completely through said tear tape transversely intermediate its length at a point therealong registering with a crease in the blank by which said flap panel is defined and is integrally hinged, said blank

being provided with additional perforations to define a knock-out portion immediately adjacent to said transverse edge of said tab, said portion being so constructed and arranged as to render said transverse edge exposed for grasping when said portion has been knocked out, whereby the box may be completely ripped at its perimeter by a generally encircling pulling movement of substantially 360° applied to said tab.

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