May 9, 1944. D. R. LA PLACE 2,348,551

PACKAGING

Filed April 9, 1941

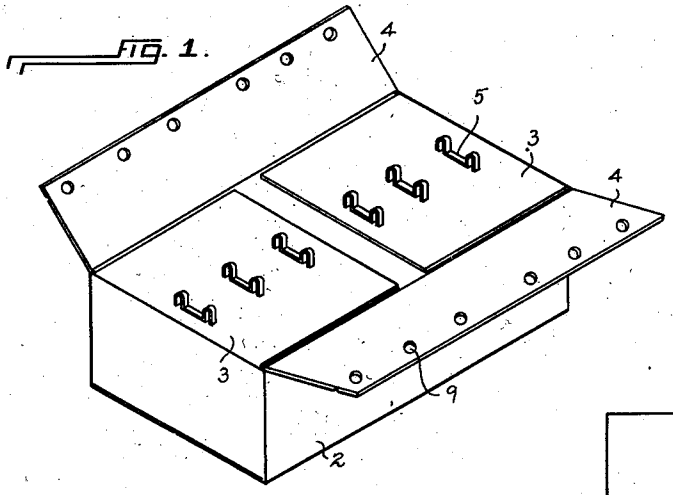



FIG. 1.

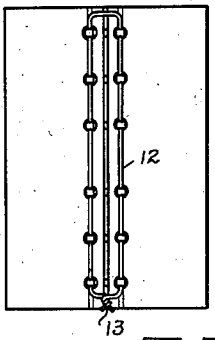



FIG. 7.

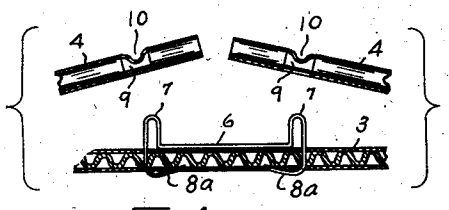



FIG. 4.

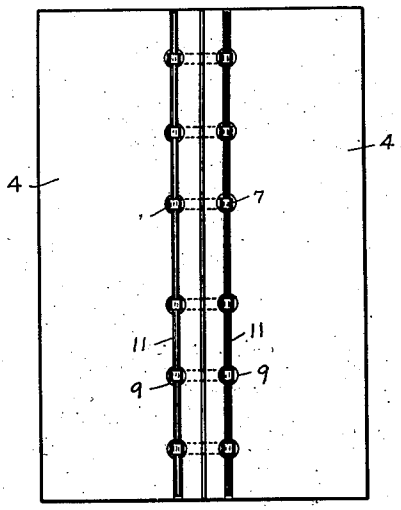



FIG. 2.

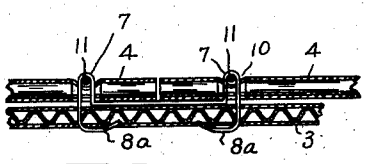



FIG. 5.

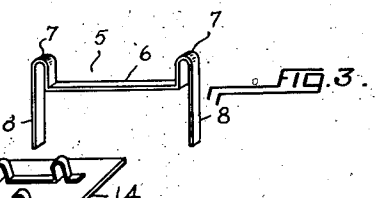



FIG. 3.

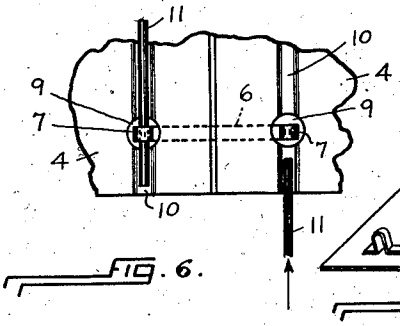



FIG. 6.

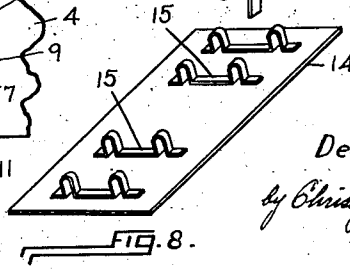



FIG. 8.

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# UNITED STATES PATENT OFFICE

2,348,551

## PACKAGING

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Application April 9, 1941, Serial No. 387,561

7 Claims. (Cl. 229—47)

This invention pertains to the art of packaging and is especially applicable to the closing or closing and sealing of cartons having flaps or lifts which overlap. The invention embodies a method of packaging and a new form of package and a novel fastener through which the method is practiced and the package is produced.

Corrugated and laminated paper cartons with folding flaps or lifts which overlap are extensively used for the transportation of a great variety of goods. One familiar way of sealing the cartons is by the use of adhesive or adhesive-coated strips. This is not satisfactory for all purposes or for all commodities, especially where the package may be subjected to moisture. Storage of such packages in a moist place frequently results in the packages opening due to the effect of the moisture on the glue. Various types of staples have heretofore been developed for closing or sealing cartons of this character. Many types of staples which are satisfactory for this purpose are of a character which must be driven after the carton has been closed. The carton is so designed that a thin metal anvil can be inserted under the lifts so that when the staples are driven through the innermost lift the points engage the anvil and are clinched, after which the anvil is withdrawn. Such packages do not provide a tight seal for loose materials because of the opening which is necessary for the insertion and removal of the anvil. Other types of staples have been devised which can be clinched in the operation of driving them but in this case the points are usually driven through the innermost lift penetrating into the box itself. The projection of the points into the box is likely to result in the damage of goods, particularly goods packed in paper packages which may be contained in the box. Also difficulty is encountered in making a tight seal because of the tendency of the inner lifts to spring inwardly where no supporting anvil is used. Still another objection to the use of staples or of adhesive is that the flaps or the lifts of the box have to be cut or torn to open the carton, rendering the carton unsuitable for re-use or even for the temporary storage of the contents in the carton.

According to the present invention all of these difficulties are avoided and provision is made for the sealing of a carton wherein the staples may be secured to the lifts of the carton before the carton is filled, and even before the contents have been put into the carton. These staples or fasteners are attached to the inner lift of the carton and have projections which pass upwardly through the overlapping lifts or flaps when these flaps are folded down, thus reversing the usual procedure of first closing the box and then putting in the staples. The parts of the staples which project through the outermost lifts or flaps are preferably in the form of closed loops. To complete the sealing of the carton a wire is threaded through these projecting loops. The wires so used may be twisted together to form a seal. When it is desired to open the carton the wire or wires are pulled out from the loops or eyelets permitting the flaps to be opened without mutilation of the flaps. The carton can be closed and the wires again inserted whenever desired, as will hereinafter more fully appear, and the carton may be re-used any number of times. The seal itself is mechanically stronger than that provided by conventional methods of stapling.

My invention has a further advantage in that it enables the fasteners to be set in the cartons by the box manufacturer so that the user does not have to have stapling equipment other than such simple implements as may be needed for threading the wires into place.

The invention may be readily understood by reference to the accompanying drawing in which—

Figure 1 is a perspective view of a carton provided with my invention and in which the inner lifts are folded into place with the outer lifts being open;

Figure 2 is a top plan view of the carton of Figure 1 after it has been closed and sealed;

Figure 3 is a perspective view of one of the staples;

Figure 4 is an enlarged transverse section through a portion of the package showing the staples set on the inner lift with the two outer lifts incompletely closed;

Figure 5 is a view similar to Figure 4 showing the lifts completely closed and the seal completed;

Figure 6 is a top plan view of that portion of the structure shown in Figure 5 illustrating the operation of applying the wires;

Figure 7 is a view similar to Figure 2 in which the ends of the wire used for sealing the receptacle are twisted together to provide a more permanent closure; and

Figure 8 is a perspective view of a modified embodiment of the invention.

Referring to the drawing, 2 designates a carton which may be of any conventional form and which may be of any desired shape and size. It

is provided with end lifts 3 which are adapted to be folded in and constitute the inner lifts of the completed carton or package. It is provided along its sides with flaps or lifts 4 which are adapted to be folded in above the inner lifts 3. The lifts 4 are adapted to substantially meet along the center line of the carton or package when they are closed as shown, for example, in Figures 2 and 7.

According to the present invention a number of fasteners of the general nature of staples are set in a line on the inner lifts 3. These staples, which are designated generally as 5, have a central bar or bridge portion 6. At each end of the bridge portion 6 is an upwardly turned loop or lobe 7. Extending downwardly from the outer side of each loop or lobe are leg portions 8. These staples or fasteners are applied to the top of the lifts 3. The legs 8 are driven through the material constituting the lifts 3 and the inner ends of the legs are clinched as shown at 8a in Figure 4. These staples can be applied to the carton at any suitable time in the manufacture or subsequent use of the carton. They can be driven at any time before the carton is finally closed so that the ends of the legs can be tightly and fully clinched against an anvil at a time when the use of an anvil is entirely convenient and practical. If the staples are applied during the manufacture of the carton they may be applied by machinery or equipment that will automatically determine the spacing and location of staples. For less extensive operations the lifts 3 may be suitably marked in the manufacture of the box to indicate the places where the staples are to be driven. The staples must be set so that the loops 7, with the form of carton shown in Figure 1, are equidistantly disposed from the longitudinal center line of the top of the carton.

The longitudinal edges of the flaps 4 are perforated as indicated at 9. The perforations are so positioned that when the flaps are folded in they will register with the loops of the several staples. The perforations 9 can be easily formed during the manufacture of the carton and the staples have to be set to properly engage these perforations. Along the line of the perforations 9 the exterior of the flaps or lifts 4 is preferably grooved or indented, these longitudinal grooves being most clearly shown in Figures 4, 5 and 6 and being designated 10.

When the lifts 4 are folded in over the flaps 3 the loops 7 project through the holes or perforations 9. The carton is then sealed by running a wire 11 along the groove 10. This wire passes through the tops of the loops or lobes 7 forming a key that prevents the flap or lift 4 from being opened until the wire is removed. By indenting or grooving the lifts 4 to provide the groves 10 the lobes 7 do not have to be as high as would be the case if the grooves were not formed. Also by providing these grooves the wires and the tops of the lobes are very nearly flush with the outer surface of the carton. This minimizes one carton tearing another when the loaded cartons are stacked. Also the grooves facilitate the guiding of the wires 11 through the alined eyes or lobes of the staples. When the box is sealed the cross-bar 6 of the staple is sandwiched between the overlapping lifts. This holds the cross-bar of the staple against pulling up or straightening out as it might do if the staples had but a single loop, i. e., if the staples were made to comprise only half the structure shown in Figure 3.

As shown in Figure 2, two separate wires 11 may be employed, one extending along the edges of each of the flaps 4. These wires are coextensive with the length of the carton. The carton is opened simply by removing the wires and may be fastened shut any number of times using the same wire. Such a construction is very desirable, for instance, in cases for bottled beverages. Where a more permanent form of seal is required, the wires 11 may be twisted together at their ends as illustrated, for instance, at the lower end of Figure 7, or instead of there being two separate wires a single piece of wire may be bent to the form of a U-shaped loop 12. After the U-shaped loop has been applied to the carton, the free ends thereof are twisted together as indicated at 13. Where it is particularly important to provide a tamper-proof seal these twisted ends may be soldered or leaded so that to open the box the wire must be actually cut or the seal broken.

It is contemplated, of course, that the same type of fastening may be used where desired in the bottom of the box as well as in the top. It is also contemplated that the lacing wires may be otherwise threaded through the eyelet, and in lieu of wire it is of course contemplated that heavy cord could, for some purposes, be employed. For example, where this method of stapling is used on both the top and bottom of the box, the wires may be passed continuously around the box, thus serving to hold the box together and additionally reenforce the box.

It is also contemplated that the staples 5 might be arranged on a lift or filler of cardboard which is entirely separate from the carton and which is laid into the carton after the carton has been packed. The overlying lifts in this case are perforated and the loops of the staples on the detached lift or filler extend upwardly through the holes of all of the lifts which overlie it. In Figure 8 there is illustrated such a detached lift or filler. The sheet of cardboard which may be coextensive with the top of the box is designated 14 and the several staples similar to the staple 5 are designated 15. The term "lift" as used in the present specification and as used in the appended claims is intended to include and to cover any such completely detached member.

While I have illustrated and described one preferred embodiment of my invention and of the method of practicing it, it will be understood that various changes and modifications may be made in the carton and in the fastener itself within the contemplation of my invention and under the scope of the following claims.

I claim:

1. A carton having inwardly folding end flaps and inwardly folding side flaps, the end flaps having double-lobed staples thereon arranged in a row with the respective lobes thereof at opposite sides of the line along which the side flaps meet when they are folded in, each of the side flaps having a row of holes therethrough positioned to register with said lobes.

2. A package in the form of a carton having end and side lifts adapted to fold in with the side and end lifts overlapping a plurality of double-lobed staples arranged in a row along the inner lifts with the respective lobes thereof on opposite sides of the center line of the carton, the edges of the outer lifts having holes therein

registering with the lobes, the lobes being of a length sufficient to project through the openings and provide a lacing receiving eyelet at the outer surface of the package.

3. A package in the form of a carton having end and side lifts adapted to fold in with the side and end lifts overlapping a plurality of double-lobed staples arranged in a row along the inner lifts with the respective lobes thereof on opposite sides of the center line of the carton, the edges of the outer lifts having holes therein registering with the lobes, and through which the lobes pass, and a lacing through the lobes over the outer lifts.

4. A package in the form of a carton having end and side lifts adapted to fold in with the side and end lifts overlapping a plurality of double-lobed staples arranged in a row along the inner lifts with the respective lobes thereof on opposite sides of the center line of the carton, the edges of the outer lifts having holes therein registering with the lobes and through which the lobes pass, a lacing through the lobes over the outer lifts, all of the holes being in a row, the outer surface of the outer lifts having a groove formed therein connecting the holes to facilitate the application of the lacing and whereby the lacing may be recessed in the lift over which it extends.

5. A package in the form of a carton having a pair of inwardly folded end lifts and a pair of inwardly folded side lifts, one pair of lifts overlapping the other, a row of double-lobed fasteners secured to the underlying lifts with the lobes thereof projecting perpendicularly therefrom the lobes of the resepctive fasteners being disposed on opposite sides of the line on which the overlying lifts substantially met when they are folded inwardly, each of the overlying lifts having a row of openings therethrough positioned to register with the lobes of the several fasteners, the lobes of the several fasteners projecting through said holes, and wires above the overlapping lobes passing through each row of lobes.

6. A package in the form of a carton having a pair of inwardly folded end lifts and a pair of inwardly folded side lifts, one pair of lifts overlapping the other, a row of double-lobed fasteners secured to the underlying lifts with the lobes thereof projecting perpendicularly therefrom, the lobes of the respective fasteners being disposed on opposite sides of the line on which the overlying lifts substantially meet when they are folded inwardly, each of the overlying lifts having a row of openings therethrough positioned to register with the lobes of the several fasteners, the lobes of the several fasteners projecting through said holes, and wires above the overlapping lobes passing through each row of lobes, the wires being joined at each end of the package whereby the package may only be opened by severing the wires.

7. A fastener of the character described comprising a flat straight bridge portion with a lobe having substantially vertical sides at each end thereof and having a leg extending as a straight continuation of the outer side of the lobe from the lobe downwardly beyond the plane of the bridge portion which leg is adapted to be passed through the lift of the carton and clinched on the under side thereof.

DESMOND R. LA PLACE.