April 27, 1943. J. P. KAVANAUGH 2,317,773

CONTAINER SEALING

Filed Feb. 26, 1942

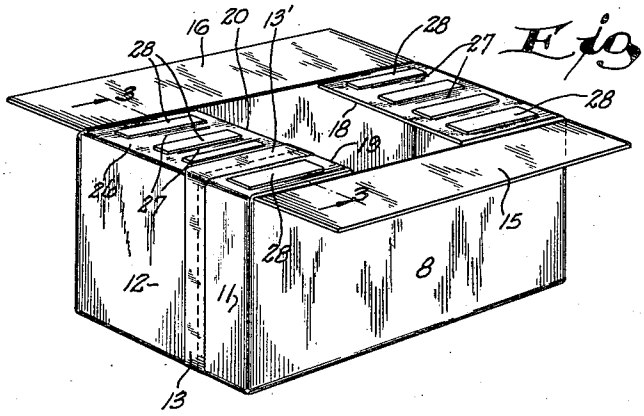


Fig. 1.

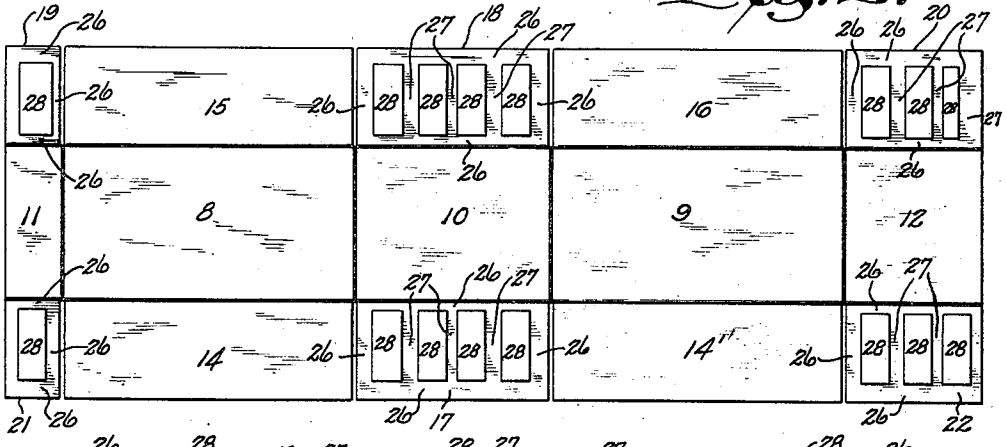


Fig. 2.

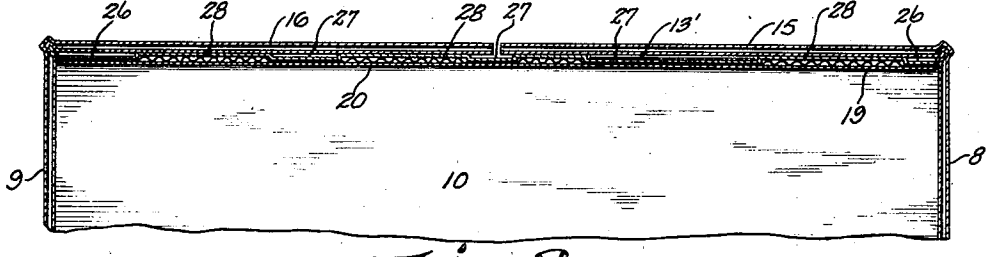


Fig. 3.

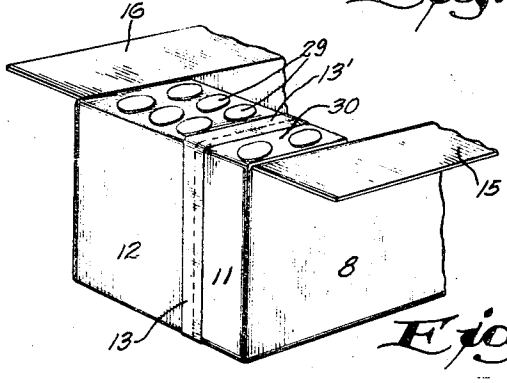


Fig. 5.

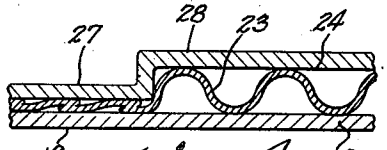


Fig. 4.

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Patented Apr. 27, 1943 2,317,773

UNITED STATES PATENT OFFICE

2,317,773

CONTAINER SEALING

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Application February 26, 1942, Serial No. 432,429

10 Claims. (Cl. 229—45)

This invention relates to improvements in container sealing, and more particularly to a container so constructed that it may be adhesively sealed and later re-opened without mutilating portions thereof.

In the use of shipping containers it is often the custom to fill the containers with unlabeled canned goods, then adhesively close the flaps so that they are in sealed condition, and then ship the filled cases to reconditioners or other distributors. These latter concerns must re-open the shipping containers for certain purposes, such as the labeling of the cans, and then re-pack the cans in the same shipping containers and re-seal the latter. Inasmuch as the original sealing is usually performed by inexperienced labor, there is no uniformity of application of the adhesive, and often so much glue is used that it is impossible to re-open the cases without mutilating portions thereof. This necessarily prevents re-use of the cases and results in added expense for replacement. The tearing and mutilation is particularly likely to occur when the containers are formed of corrugated board. Corrugated containers, on the other hand, are desirable for other reasons, and a particular type of corrugated container having a taped joint saves considerable expense in shipment as compared with stitched containers formed of solid fiberboard. The taped joint, however, presents additional difficulties in connection with re-opening because the tape extends into two of the end flaps and is easily torn loose when the reconditioners attempt to separate the tightly glued flaps from one another in re-opening the cases.

It is recognized that the use of ink or other glue-repellant coatings has been heretofore suggested, but the methods of using these repellant materials have not been suitable for solving applicant's problem, nor has there heretofore, so far as the inventor is aware, been a suggestion as to any method of protecting the taped joint of a taped corrugated container. Because of the careless manner in which the containers are originally sealed, it is necessary that the containers be so formed originally that re-opening without any chance of mutilation is practical. It is a general object of the present invention to provide improvements in container sealing wherein means for preventing or retarding the adherence of certain portions of the flaps to one another is so located on the flaps as to facilitate re-opening and insure against mutilation or separation of the corrugated plies from one another.

It is a further object of the invention to provide in a corrugated container construction as above described, areas wherein the corrugated board is broken down or compressed to a level below the level of adjacent areas. Thus depressions are formed where the adhesive union with a juxtaposed flap portion is prevented or materially retarded.

A further object of the invention is to provide a container as above described wherein the depressed areas may be coated with an adhesive-repellant material to further insure against an undesired adhesion after sealing.

A still further object of the invention is to provide in a container of the type having a taped joint, means for protecting that portion of the joint which extends into the end flaps so that the tape over the joint will not adhere to juxtaposed flaps when the container is sealed.

With the above and other objects in view, the invention consists of the improvements in container sealing and all its parts and combinations as set forth in the claims, and all equivalents thereof. In the accompanying drawing illustrating one complete embodiment of the preferred form of the invention, in which the same reference numerals designate the same parts in all of the views,

Fig. 1 is a perspective view of a taped joint type of shipping container illustrating how the invention may be applied thereto, the side flaps at the top of the box being open;

Fig. 2 is a plan view of the container blank before assembly;

Fig. 3 is an enlarged fragmentary sectional view taken on line 3—3 of Fig. 1 showing the side flaps closed;

Fig. 4 is a fragmentary sectional view transversely at one of the end flaps on an exaggerated scale; and

Fig. 5 is a fragmentary perspective view of an assembled container showing a modified construction.

Referring more particularly to the drawing, the container is formed of corrugated board and comprises side walls 8 and 9, an end wall 10, and a second end wall formed of abutting sections 11 and 12 which are joined by tape 13 adhesively secured over the joint. The container also includes bottom side flaps 14 and 14', top side flaps 15 and 16, a bottom end flap 17, and a top end flap 18. The other end flap at the top is formed by the end flap sections 19 and 20,

and the corresponding end flap at the bottom by the sections 21 and 22. These flaps are not completely formed until after the tape 13 is applied over the joint between the edges of the end walls 11 and 12, over the joint between the edges of the flap portions 19 and 20, and over the joint between the edges of the flap portions 21 and 22.

While the drawing illustrates a taped joint type of container, it is obvious that features of the invention are also applicable to containers which are assembled by the use of stitching flaps and to other types of containers which must be adhesively sealed.

When the container blank of Fig. 2 is manufactured, certain areas of the flaps 17, 18, 19, 20, 21, and 22 are compressed so that the corrugated layer 23 between the top liner 24 and bottom liner 25 is broken down, as indicated on the left-hand side of Fig. 4. This creates certain areas which are at a substantially lower level on top of the flaps than other areas. In the preferred embodiment of the invention the outline edges of the flaps are depressed, as indicated by the numeral 26, and there are also transversely extending depressed areas 27 spaced apart by raised areas 28. No pressure is applied over the raised areas, and these areas therefore are of the normal thickness of the corrugated board, whereas the depressed areas are of substantially less thickness. In the preferred form of the invention the raised areas 28 are in the form of rectangles. The exact shape, however, may be varied as desired. For example, in Fig. 5 the raised areas are shown in the form of circles 29 with all of the rest of the flap depressed as at 30.

For particular use in the type of container illustrated having a taped joint, the raised areas 28 on each side of the joint are spaced a sufficient distance apart so that the portions 13' of the tape, which extend into the flaps, extend through a depressed area which is of sufficient width to readily accommodate container tape of standard width. Inasmuch as the tape is only of paper thickness the top surface of the tape will be well below the level of the high areas 28. This arrangement may be used both on the top and bottom of the box.

Containers of this type after being filled with canned goods are sealed by applying adhesive to the under surface of the side flaps or to the top surface of the end flaps, or to both, and the side flaps are then folded over the end flaps, as shown in Fig. 3, to become adhesively united with those portions of the end flaps which the side flaps contact. It is to be noted from Fig. 3 that the free meeting edges of the side flaps 15 and 16 extend longitudinally over one of the depressed areas 27 so that there is no substantial adhesion at the free edge portions of the flaps 15 and 16. Inasmuch as the application of the adhesive is usually done by inexperienced workmen, containers of usual construction become so firmly sealed that reconditioners cannot separate the flaps when re-opening the cases without mutilating portions of the container or causing separation of layers of the corrugated board from one another. With the present invention good adhesion takes place only with the high areas 28 or 29, and either no adhesion or adhesion of limited character takes place with the depressed areas 26, 27, and 30. Thus when the reconditioner desires to open the container, separation of the flaps from one another can be readily effected without causing mutilation or tearing. With applicant's arrangement of having the outline of each end flap formed with a depressed area 26, the fingers can be readily inserted at said outline so that a good grip can be easily obtainer on the side flaps to facilitate pulling them open. Furthermore, by having no adhesion, or limited adhesion at the outlines of the flaps, there is no tendency to separate the plies forming the corrugated board from one another. Such separation is most likely to occur when the edges of the flaps are glued tightly to one another.

In order to further repel adhesion, the depressed areas 26, 27, and 30 may be printed, at the time of manufacture, with an ink such as Carnation Red, and the high areas 28 and 29 may be left unprinted. In lieu of ink other wax or oil containing glue-repellant coatings may be used.

In the taped joint type of box illustrated, the portion 13' of the tape which extends into the end flaps may have its outer surface printed with ink or coated with other glue-repellant material. This is an important feature of the invention whether used in conjunction with depressed areas or not.

The invention provides for a controlled spot type of sealing at the time of manufacture of the container so that a proper type of seal is obtained regardles of the use of inexperienced help in the sealing operation, and regardless of the method of sealing which is employed. The invention therefore makes it entirely practical to use a corrugated container for shipments which require re-opening by reconditioners, and it also makes it possible to use the inexpensive taped joint type of container. While the advantages of the invention are particularly great in connection with corrugated containers, containers made of other types of paper board capable of having portions compressed to less thickness may also embody the features of the invention, but of course containers formed of corrugated board permit compression of certain areas to a relatively low level because of the ease with which the inner corrugated layer may be broken down.

In the claims the term "paperboard" includes corrugated board, solid fiberboard, or any other like material.

One aspect of this invention comprehends the use of an adhesive-repellant coating, such as ink, whether or not the depressed areas are employed, but where other features of the present disclosure are used in connections with the location of said coating.

Various changes and modifications, and various additional adaptations may be made without departing from the spirit of the invention, and all of such changes and adaptations are contemplated as may come within the scope of the claims.

What I claim is:

1. In a container formed of paperboard or the like, a flap portion adapted to be adhesively secured to another container portion when the container is sealed, one of said portions having areas which are relatively raised and depressed in the surface to be juxtaposed to the other portion, whereby adhesive union with the depressed areas will be prevented or retarded and whereby good adhesive union can be effected only with the raised areas, said raised areas being of the normal thickness of the paperboard, and said de-

pressed areas being less than said normal thickness, and said raised areas being of sufficient size and so located as to support a juxtaposed container portion out of contact with all of the depressed areas.

2. In a container formed of paperboard or the like, a flap portion adapted to be adhesively secured to another container portion when the container is sealed, one of said portions having areas which are relatively raised and depressed in the surface to be juxtaposed to the other portion, and adhesive-repellant material coating said depressed areas, said raised areas being of the normal thickness of the paperboard, and said depressed areas being less than said normal thickness, and said raised areas being of sufficient size and so located as to support a juxtaposed container portion out of contact with all of the depressed areas.

3. In a container formed of corrugated board, a flap portion adapted to be adhesively secured to another container portion when the container is sealed, one of said portions having areas which are relatively raised and depressed in the surface to be juxtaposed to the other portions, whereby adhesive union with the depressed areas will be prevented or retarded and whereby good adhesive union can be effected only with the raised areas, the fluted layer of the corrugated board being broken down below said depressed areas, said raised areas being of the normal thickness of the corrugated board and being of sufficient size and so located as to support a juxtaposed container portion out of contact with all of the depressed areas.

4. In a container formed of paperboard or the like, a flap portion adapted to be adhesively secured to another container portion when the container is sealed, one of said portions having areas which are relatively raised and depresed in the surface to be juxtaposed to the other portion, whereby adhesive union with the depresed areas will be prevented or retarded and whereby good adhesive union can be effected only with the raised areas, said depressed areas cooperating in position with marginal edges of at least one of said container portions when the two container portions are juxtaposed, said raised areas being of the normal thickness of the paperboard, and said depressed areas being less than said normal thickness, and said raised areas being of sufficient size and so located as to support a juxtaposed container portion out of contact with all of the depressed areas.

5. In a container formed of corrugated board, a flap portion adapted to be adhesively secured to another container portion when the container is sealed, one of said portions having areas which are relatively raised and depressed in the surface to be juxtaposed to the other portions, whereby adhesive union with the depressed areas will be prevented or retarded and whereby good adhesive union can be effected only with the raised areas, the fluted layer of the corrugated board being broken down below said depressed areas, said depressed area cooperating in position with marginal edges of at least one of said container portions when the two container portions are juxtaposed, said raised areas being of the normal thickness of the corrugated board and being of sufficient size and so located as to support a juxtaposed container portion out of contact with all of the depressed areas.

6. In a container formed of paperboard or the like, a flap portion adapted to be adhesively secured to another container portion when the container is sealed, one of said portions having areas which are relatively raised and depressed in the surface to be juxtaposed to the other portion, whereby adhesive union with the depressed areas will be prevented or retarded and whereby good adhesive union can be effected only with the raised areas, some of said depresed areas cooperating in position with marginal edges of the container portion on which said depressed areas are located, and other depressed areas being spaced apart and connecting opposite marginal depressed areas, said raised areas being of the normal thickness of the paperboard, and said depressed areas being less than said normal thickness, and said raised areas being of sufficient size and so located as to support a juxtaposed container portion out of contact with all of the depressed areas.

7. In a sealed container formed of paperboard or the like and having side and end flaps, an abutting joint intermediate one wall of the container and extending through the flaps connected to said wall, and a strip of tape secured exteriorly over said joint and extending over the joint on said flaps from the fold lines of said flaps toward the free edge of said flaps, at least one of said taped flaps having relatively raised and depressed areas on its upper surface with the tape extending through a depressed area and having its upper surface lower than the upper surfaces of adjacent raised areas, the flaps at right angles to said taped flap having their lower surfaces adhesively secured to the upper surfaces of the raised areas, and said raised areas being of such size and so positioned as to maintain said adhesively secured lower surfaces in spaced relation above the upper surface of the tape throughout the extent of the tape in said flap.

8. In a sealed container formed of paperboard or the like and having side and end flaps, an abutting joint intermediate one wall of the container and extending through the flaps connected to said wall, and a strip of tape secured exteriorly over said joint and extending over the joint on said flaps from the fold lines of said flaps toward the free edge of said flaps, at least one of said taped flaps having relatively raised and depressed areas on its upper surface with the tape extending through a depressed area and having its upper surface lower than the upper surfaces of adjacent raised areas, the flaps at right angles to said taped flap having their lower surfaces adhesively secured to the upper surfaces of the raised areas, and said raised areas being of such size and so positioned as to maintain said adhesively secured lower surfaces in spaced relation above the upper surface of the tape throughout the extent of the tape in said flap, and a coat of adhesive-repellant material over that portion of the tape in the depressed area.

9. In a sealed container formed of corrugated board and having inwardly folded side and end flaps, an abutting joint intermediate one wall of the container and extending through the flaps connected to said wall, and a strip of tape secured exteriorly over said joint and extending over the joint on said flaps from the fold lines of said flaps toward the free edges of said flaps, at least one of said taped flaps having relatively raised and depressed areas on its upper surface, the fluted layer of the corrugated board being broken down below said depressed areas and said tape

extending through a depressed area and having its entire surface lower than the upper surfaces of adjacent raised areas, the flaps at right angles to said taped flap having their lower surfaces adhesively secured to the upper surfaces of the raised areas, and said raised areas being of such size and so positioned as to maintain said adhesively secured lower surfaces in spaced relation above the upper surface of the tape throughout the extent of the tape in said flap.

10. In a sealed container formed of paperboard or the like, end flaps folded inwardly over the container, side flaps folded inwardly on top of said end flaps, the contacting surface of one of said sets of flaps having relatively raised and depresed areas, and adhesive material securing one set of flaps to the raised areas of the other set of flaps, said raised areas being of the normal thickness of the paperboard, and said depressed areas being less than said normal thickness, and said raised areas being of sufficient size and so located as to maintain the juxtaposed flaps out of contact with all of the depressed areas.

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