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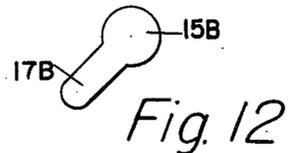
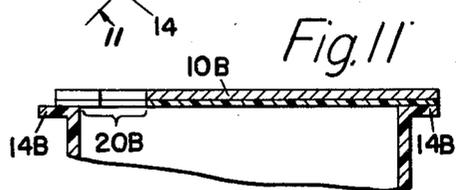
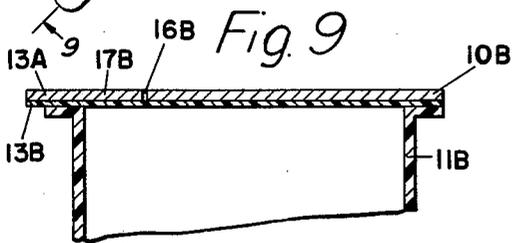
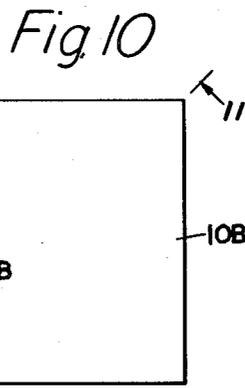
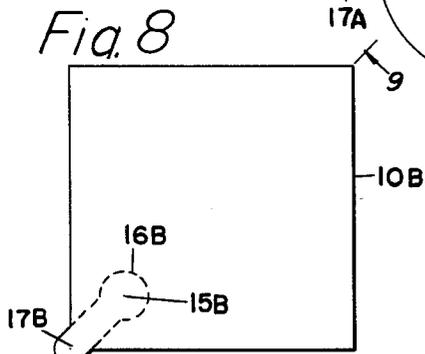
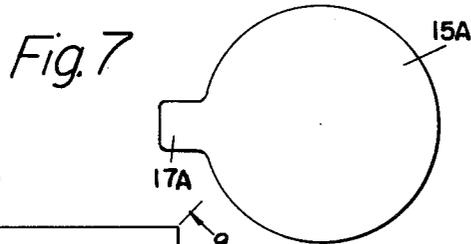
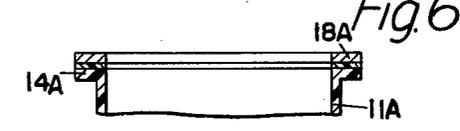
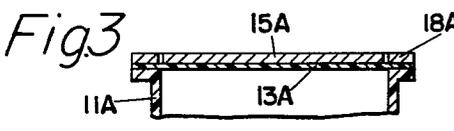
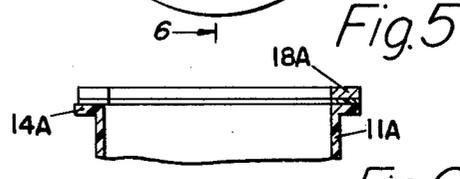
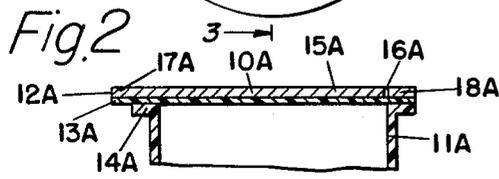
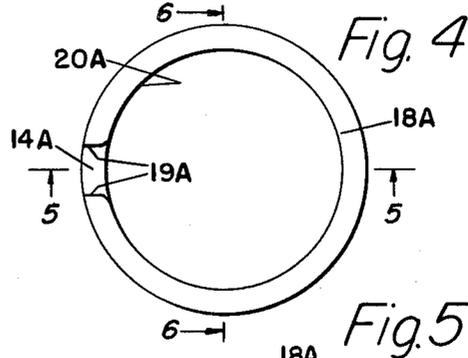
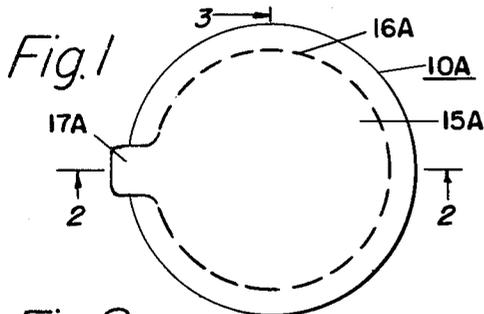
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TEAR-OPEN SEALED CONTAINERS

Filed Aug. 4, 1961

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TEAR-OPEN SEALED CONTAINERS

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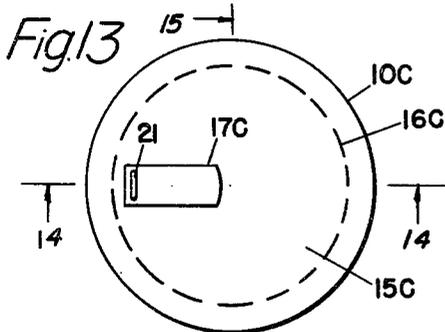


Fig. 16

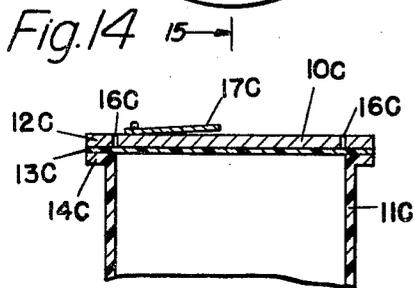
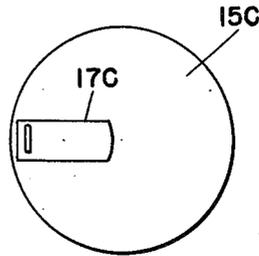


Fig. 17

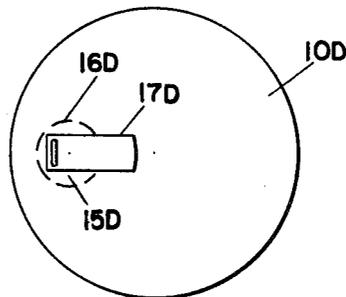


Fig. 15

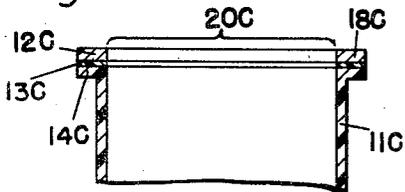


Fig. 18

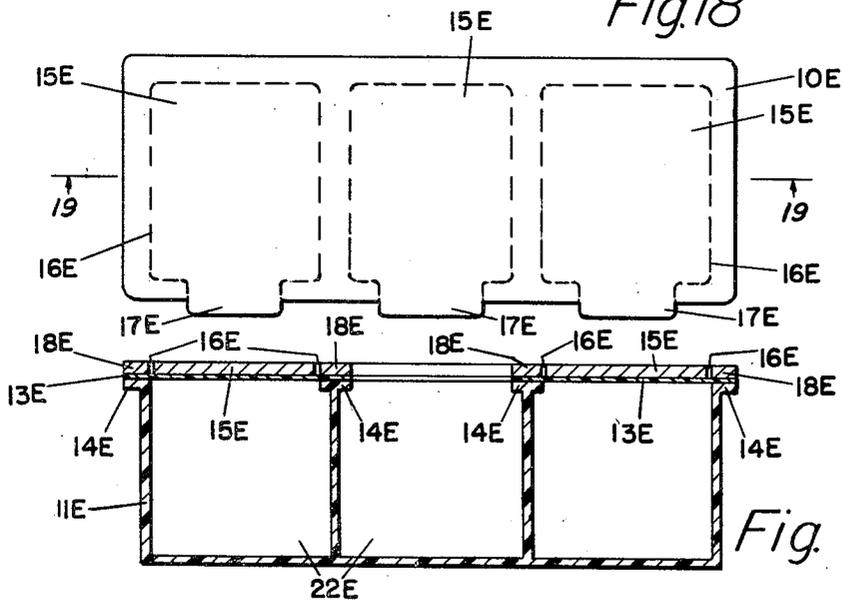


Fig. 19

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TEAR-OPEN SEALED CONTAINERS

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This invention relates to sealed containers and particularly to a cover or lid construction therefor which affords effective sealing and can be torn for access to the container contents.

In accordance with the present invention, the open end or mouth of the container body is sealed by a lid or cap comprising two bonded layers of substantially different strength. The inner or weaker layer extends across and is sealed to the mouth of the container body: the stronger layer has a pre-defined tear-out section or area within the inner boundary of the seal between the weaker layer and the container body. When the tear-out area of the stronger layer of the lid is removed, the bond between the layers provides for concurrent tear-out of the corresponding bonded but previously imperforate area of the weaker layer, so unsealing the container for access of its contents

More particularly, the outer lid layer may be of cardboard, strong plastic sheet, metal foil or the like coated or laminated with substantially weaker material forming a thin membrane as the inner layer of the lid. When the container body is of heat-sealing plastic or its open end is coated with such material, or the premade top is coated with a heat-sealing compound, the inner layer of the lid is of heat-sealing plastic to provide for sealing of the lid to the container body as by application of heat and pressure or by supersonic "cold" welding. The tops may be crimped from either the top material or from the bottom caps.

Further in accordance with the invention, the outer lid layer is deeply scored, cut or otherwise perforated to define its tear-out area before or after the application of the coating or film forming the inner layer of the lid so as to provide continuity of the inner layer for sealing purposes. The tear-out area of the outer lid layer may substantially coincide with the inner boundary of the sealing area of the weaker layer for complete exposure of the open end of the container as unsealed; alternatively, the tear-out area may be so defined that its removal with concurrent tear-out of the corresponding area of the inner weaker layer leaves a small hole through the lid for pouring out of the container contents or for insertion of a straw or the like.

Further in accordance with the invention, to facilitate opening of the sealed container without recourse to a knife or other tool, the lid is provided with a lifting tab which extends from the tear-out area of the stronger layer as an integral part of it, or is attached thereto as an initially separate element.

The invention further resides in sealed containers and lids therefor having features of construction, combination and arrangement hereinafter described and claimed.

For a more detailed understanding of the invention, reference is made in the following description of preferred embodiments thereof to the accompanying drawings in which:

FIG. 1 is a plan view of a lid whose tear-out area corresponds in size with the mouth of the container;

FIGS. 2 and 3 are side elevational views, respectively taken on lines 2-2 and 3-3 of FIG. 1 showing the lid of FIG. 1 applied to a container;

FIG. 4 is a plan view showing the container of FIGS. 2 and 3 as unsealed;

FIGS. 5 and 6 respectively correspond with FIGS. 2 and 3 but with the container unsealed;

FIG. 7 is a plan view of the torn-out section of the lid of FIGS. 1 to 6;

FIG. 8 is a plan view of a lid whose tear-out area is much smaller than the container mouth;

FIG. 9 is a side elevational view in section taken on line 9-9 of FIG. 8 showing the lid applied to a container;

FIG. 10 is a plan view of the container of FIG. 9 as unsealed;

FIG. 11 corresponds with FIG. 9 but with the container unsealed;

FIG. 12 is a plan view of the tear-out from FIGS. 10 and 11;

FIG. 13 is a plan view of a modification of FIG. 1 with an attached tab;

FIGS. 14 and 15 are side elevational views in section taken on lines 14-14 and 15-15 of FIG. 13 respectively showing the container as sealed and unsealed;

FIG. 16 is a plan view of the tear-out from FIG. 15; FIG. 17 is a plan view of a modification of the lid of FIG. 13;

FIG. 18 is a plan view of a lid for a multi-compartment container; and

FIG. 19 is a side elevational view, in section, taken on line 19-19 of FIG. 18 showing the lid of FIG. 18 applied to a container and with one compartment unsealed.

Referring to FIGS. 1 to 3, the lid 10A closing the open end or mouth of the container body 11A to form a sealed container comprises the bonded layers 12A, 13A which differ substantially in strength. The inner weaker layer 13A is sealed throughout its marginal area to the edge or lip 14A of the container body. The outer stronger layer 12A has a tear-out section 15A defined by the tear-line 16A which in this case substantially coincides with or overlies the inner boundary of the sealed marginal area of the inner weaker layer 13A. The cuts or perforations of the tear-out line do not extend through the inner layer 13A of the lid so leaving it intact to provide a hermetic seal isolating the container contents as shown in FIGS. 2 and 3.

To facilitate removal of its tear-out section 15A, the lid is provided with a tab 17A which extends outwardly beyond the lip 14A of the container as an integral part of the tear-out section of the lid. To unseal the container, it is only necessary to grasp and lift the tab 17A as with the thumb and fore-finger of one hand while the container body is held with the other hand. Lifting of the tab 17A for removal of the tear-out section 15A of the upper stronger layer 12A effects a concurrent tearing out of the corresponding bonded area of the inner weak layer 13A (FIGS. 4 to 7), leaving a large lid opening 20A which completely exposes the mouth of the container for removal of its contents. The sealed marginal portion 18A of the original lid remains attached to the lip 14A of the container body (FIGS. 4 to 6) except at the gap 19A corresponding with the original position of tab 17A of the tear-out section.

When the shape of the open end of the container is other than circular, the outline of the lid and its tear-out area is correspondingly different; for example, when the container is square-ended, the lid will be square as in FIG. 8.

FIGS. 8 to 12 illustrate the invention as used to provide, when the container is unsealed, a small lid opening exposing only a corner or spout portion of the container body to permit pouring of its contents or insertion of a drinking straw or the like.

Referring to FIGS. 8 and 9, the lid 10B is of square outline to conform with the shape of the container 11B which may be used, for example, as a milk bottle or container for some other beverage. The inner weaker layer

13A of the lid overlies the open end of the container with its marginal area sealed thereto. The outer stronger layer 12B of the lid has a small tear-out section 15B defined by the tear-out line 16B which is within the inner boundary of the peripheral seal between the weaker layer 13B and the mouth of the container. The tear-out section 15B as shown is localized near one corner of the container. In this, as in all other modifications, the cuts or perforations of the tear-line extend through, or substantially through, the strong layer but do not extend through the inner weaker layer. The tab 17B, as in part defined by the spaced ends of the tear-line 16B, extends over and outwardly beyond the corner of the container as an integral part of at least the upper stronger layer 12B and as an extension of the tear-out section 15B.

To unseal the container, the tab 17B is lifted for removal of the tear-out section 15B of the outer lid layer and for a concurrent tear-out of the corresponding bonded area of the inner weaker layer 13B. The removal of the tear-out and its tab extension (FIG. 12) leaves the lid 10B with a small opening 20B (FIGS. 10 and 11) at the corner of the container 11B. The contents of the container may be removed by pouring them through the corner opening 20B or by inserting a straw or other tube through that opening. Except at the corner gap 19B, the lid 10B remains attached to the open end of the container because except at this region the seal between the container and the lid is not disturbed.

The modification shown in FIGS. 13 to 16 is similar to that of FIGS. 1 to 7 except that the lifting tab does not extend across the seal area of the lid and is not an integral part of the lid. One end of the tab 17C is attached, as by gluing or stapling, to the upper face of the lid within the tear-out area 15C defined by the tear-line 16C. The cuts or perforations of the tear-line 16C are wholly within the strong outer layer 12C of the lid (FIG. 14) leaving the inner weaker layer intact. If the tab 17C is attached by a staple 21, the stapling (if hermetic sealing of the container is required) should be effected before application to the layer 12C of the coating or film forming inner layer 13C.

The lifting of tab 17C by its free end for removal of the tear-out section 15C of the upper layer 12C effects concurrent tear-out of the corresponding bonded area of the inner weak layer 13C so providing a lid opening 20C (FIG. 15) coextensive with the mouth opening of the container 11C. The rim 18C of the original lid 10C remains attached to the lip 14 of the container mouth throughout its entire peripheral length. The lid tear-out as completely removed from the container is shown in FIG. 16.

The tab 17C may be omitted in which case the container may be unsealed by pressing on tear-out section 15C with the thumb for example. The pressure so exerted on the strong outer layer breaks the weak inner layer along the tear-line 16C leaving the large opening 20C with a clean smooth edge formed by the rim 18C of the original cover. Thus, when the container is a jar or bottle holding powdered or instant coffee for example, the contents may be spooned out without obstruction by jagged torn edges as occurs with seals previously used.

In the modification shown in FIG. 17, like that of FIGS. 13 to 16, the tab 17D is secured to the upper face of the stronger outer layer within the tear-out area but in FIG. 17 the tear-out area 15D is much smaller to provide a correspondingly smaller lid opening 15D when the container is unsealed. In this respect, this modification is similar to that of FIGS. 8 to 12. In this modification also, the tab 17D may be omitted and unsealing of the container effected by pushing in the tear-out section 15D. The pressure applied to the strong outer layer of the lid within the area defined by the tear-line 16D cleanly breaks away the corresponding area of the weak inner layer.

As shown in FIGS. 18 and 19, the invention may be used for multi-compartment containers and so used pro-

vides a single lid which permits selective unsealing of individual compartments. In outline, the lid 10E matches the open end of the whole container body 11E with its inner weaker layer 13E overlying the open ends of all of the individual compartments 22E. The seal between the inner weaker layer 13E and the mouth of each compartment 22E isolates the compartments from one another and from the ambient atmosphere. The stronger outer layer 12E of the lid, which as in all modifications, is bonded to the inner weaker layer, has a number of tear-out areas or sections 15E, one for each compartment 22E and defined by a corresponding tear-line 16E. In the particular lid construction shown, each tear-line 16E substantially coincides with the inner boundary of the seal between the upper wall edge of the corresponding compartment and the inner weaker layer 13E of the lid.

Each tear-out section 15E of lid 10E has its individual tab 17E which, as shown, may be an integral extension of that tear-out section or which may, as in FIGS. 13 to 17, be attached as a separate element to the upper face of the tear-out section.

Any compartment of container 11E may be selectively unsealed for access to its contents simply by lifting tab 17E of the associated tear-out area. The lifting force applied for removal of the selected tear-out area 15E also tears out the corresponding area of the bonded inner weaker layer 13E. In FIG. 19, the middle compartment of container 11E has been so opened, leaving the end compartments still sealed.

In all of the lids above described, the outer layer is of cardboard, plastic sheet, metal foil or the like having toughness and strength to protect the inner weaker layer from accidental rupture. The inner weaker layer may be a coating applied to the web or sheet from which the lids are cut or it may be a thin film or membrane, of thickness usually less than 0.001 inch, bonded to such web. Both layers of the lid may be of transparent heat-sealing plastic to permit their joinder by hot or cold welding and to permit inspection of the contents of a sealed container whose body is opaque or not exposed. In any case, the bonding of the layers is effected after the stronger web or sheet has been scored, cut or perforated to define the tear-out areas, thus to insure continuity of the surface of the inner layer for the sealing purposes described. For most uses, the inner lid layer is a heat-sealing plastic, such as polyethylene, for example, for sealing of the lid to the open end of a container body either made from heat-sealing plastic by injection molding, blow molding, vacuum forming, or other known process or whose mouth end has been coated with heat-sealing plastic. In the latter case, the container body may be of any container material including cardboard, glues, metal-foil, glass or plastic which of itself is not heat-sealing.

In all of the modifications described, the tear-line—particularly at a region opposite the tab location—may have an interruption providing a hinge in event that it is not desired completely to remove the tear-out area of the lid and the corresponding bonded area of the inner layer thereof.

What is claimed is:

1. A sealed container which can be opened without recourse to a knife or other tool comprising
 - a container having an open end bounded by a lip, and
 - a lid extending over and peripherally sealed to said lip of the container body,
 - said lid consisting of two coextensive layers of substantially different strength and having their adjacent faces bonded together throughout the areas thereof, the inner and weaker of said layers being imperforate and sealed throughout its marginal area to said lip to provide hermetic sealing of the container by said lid,
 - the outer and stronger of said layers having a tab extending from a tear-out section defined by a tear-line, the bond between said layers
 - (a) maintaining the stronger outer layer in posi-

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tion to protect the inner weaker layer from accidental rupture,

- (b) insuring that lifting of said tab for removal of said tear-out section of the stronger outer layer of the lid is effective to cause concurrent tear-out of the corresponding bonded area of the previously imperforate inner weaker layer of the lid, and
- (c) insuring that during tear-out the remainder of the lid remains attached to the container body.

2. A sealed container as in claim 1 in which the area of the tear-out section of the stronger outer layer of the lid substantially corresponds with that of the open end of said container body, the lifting of said tab for removal of said tear-out section effecting concurrent removal of the corresponding bonded area of the inner weaker layer of the lid and leaving the marginal areas of said layers attached to said lip of the container body.

3. A sealed container as in claim 1 in which the mouth of the container body has at least two straight sides meeting at a corner, in which the tear-out section of the stronger outer layer of the lid is localized at said corner, the lifting of said tab for removal of said tear-out section of the stronger outer layer of the lid effecting concurrent removal of the corresponding bonded area of the inner weaker layer of the lid to provide a pouring-spout opening in the remainder of the lid remaining attached to said lip of the container body.

4. A sealed container as in claim 1 in which the tear-out section of the stronger outer layer of the lid is much smaller than that of the open end of the container body, the lifting of said tab for removal of said tear-out section effecting concurrent removal of the corresponding bonded area of the inner weaker layer of the lid to provide a small opening in the remainder of the lid remaining attached to said lip of the container body.

5. A lid for sealing the open end of a container body comprising two coextensive layers matching said open end in size and shape, said layers being of substantially different strength and having their adjacent faces bonded together throughout the areas thereof, the inner and weaker of said layers being suited for sealing of its marginal area to the rim of said open end of the container body and being imperforate to provide hermetic sealing, the outer and stronger of said layers having a tab extending from a tear-out section defined by a tear-line, the bond between said layers of the lid as sealed to the container body

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(a) maintaining the stronger outer layer in position to protect the inner weaker layer from accidental rupture,

(b) insuring that lifting of said tab for removal of said tear-out section of the stronger outer layer of the lid is effective to cause concurrent tear-out of the corresponding bonded area of the previously imperforate inner weaker layer of the lid, and

(c) insuring that during tear-out the remainder of the lid remains attached to the container body.

6. A sealed container which can be opened without recourse to a knife or other tool comprising

a container having an open end bounded by a lip, and a lid extending over and peripherally sealed to said lip of the container body,

said lid consisting of two coextensive layers of substantially different strength and having their adjacent faces bonded together throughout the areas thereof, the inner and weaker of said layers being imperforate and sealed throughout its marginal area to said lip to provide hermetic sealing of the container by said lid,

the outer and stronger of said layers alone having a tear-out section,

the bond between said layers

(a) maintaining the stronger outer layer in position to protect the inner weaker layer from accidental rupture,

(b) being effective during removal of said tear-out section of the stronger outer layer to cause concurrent tear-out of the corresponding bonded area of the previously imperforate inner weaker layer, and

(c) insuring that during tear-out the remainder of the lid remains attached to the container body.

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