

May 19, 1959

T. E. BETNER

2,887,244

RE-USABLE PLASTIC CONTAINERS

Filed Feb. 26, 1958

Fig. 1

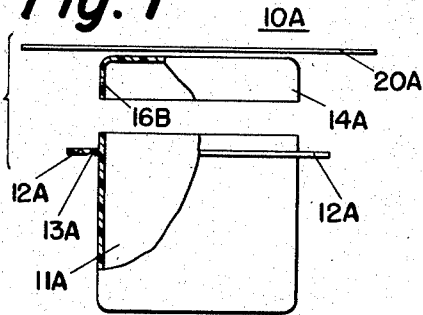


Fig. 4

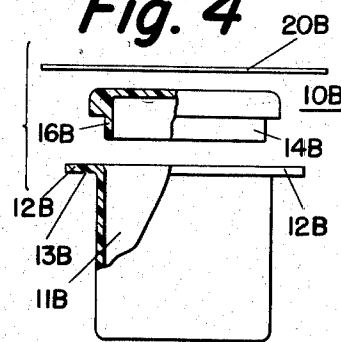


Fig. 2

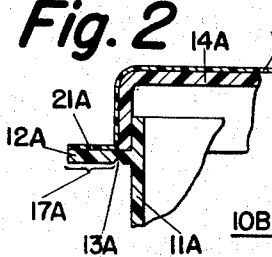


Fig. 3

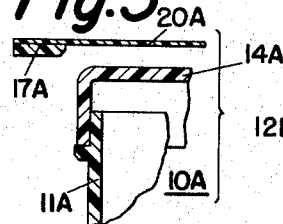


Fig. 5

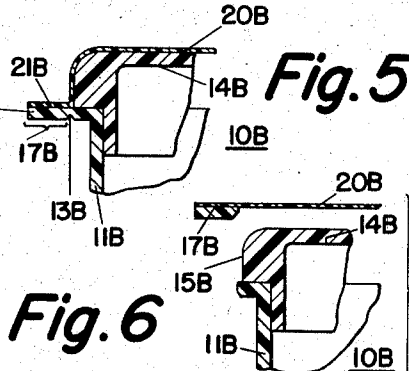


Fig. 7

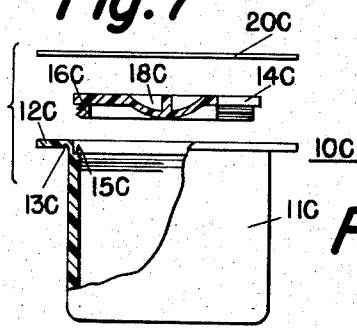


Fig. 6

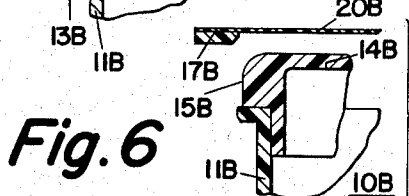


Fig. 10

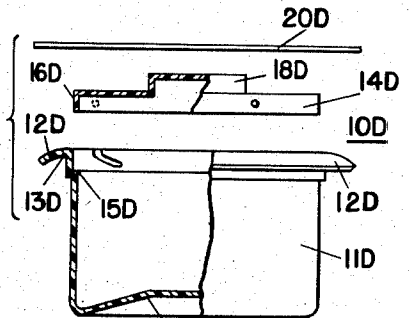


Fig. 8

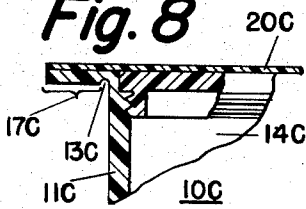


Fig. 9

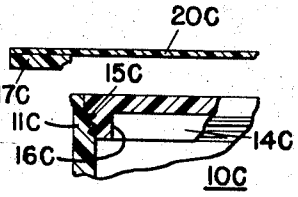


Fig. 11

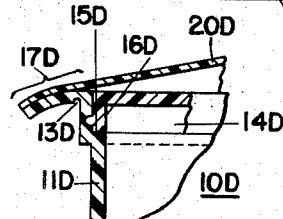
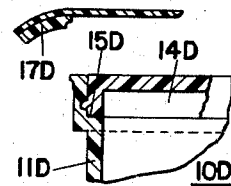


Fig. 12



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RE-USABLE PLASTIC CONTAINERS

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Application February 26, 1958, Serial No. 717,633

16 Claims. (Cl. 220—39)

This invention relates to plastic containers which during shipment and display, for example, are provided with a hermetic heat-seal for protection of the container contents and which, when such seal is detached, may thereafter be used for protected storage of its partially depleted contents, or for other purposes, since the container body and a top therefor remain completely intact.

This application is in part a continuation of my co-pending application, Serial No. 413,779, upon which has issued Letters Patent No. 2,837,236.

In accordance with the invention, the container consists of a body, a re-usable cover and a disposable cover. The body is preformed of plastic and has an integral peripheral flange which is heat-sealed to a corresponding flange formed by the periphery of the disposable cover to provide a hermetic seal and to press together the engaging surfaces of the disposable cover and body to provide a mechanical seal.

For initial access to the container contents, the heat-sealed flanges, together with the disposable cover, are torn off, leaving the container body and re-usable cover intact for re-use.

The invention further resides in features of construction, combination and arrangement hereinafter described and claimed.

For a more detailed understanding of the invention and for illustration of various embodiments thereof, reference is made to the accompanying drawings in which:

Fig. 1 is an elevational view, partly in section, of the body and cover components of a container;

Fig. 2 is a partial sectional view showing the components of Fig. 1 sealed in closed-container relation;

Fig. 3 is a sectional view corresponding with Fig. 2 after removal of the hermetic seal and disposable cover;

Fig. 4 is an elevational view, partly in section, of the body and cover components of a modification of Fig. 1;

Fig. 5 is a partial sectional view showing the components of Fig. 4 sealed in closed-container relation;

Fig. 6 is a partial sectional view corresponding with Fig. 5 after removal of the hermetic seal and disposable cover;

Fig. 7 is an elevational view, partly in section, of the body and cover components of a third form of the container;

Fig. 8 is a partial sectional view showing the components of Fig. 7 sealed in closed-container relation;

Fig. 9 is a partial sectional view corresponding with Fig. 8 after removal of the hermetic seal and disposable cover;

Fig. 10 is an elevational view, partly in section, of the body and cover components of a fourth form of the invention;

Fig. 11 is a partial sectional view showing the components of Fig. 10 sealed in closed-container relation; and

Fig. 12 is a partial sectional view corresponding with Fig. 11 after removal of the hermetic seal and disposable cover.

Referring to Figs. 1 to 3, the container 10A comprises a body 11A of any suitable size and shape for receiving

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the container contents which may be foodstuffs, chemicals or the like, particularly those such as jams, cream cheese, salves, ointments or the like which are semi-solid in nature, and which should be maintained in uncontaminated or sterile state. The body 11A, like that of the other containers herein described, is of suitable plastic, such as polyethylene or one of its derivatives, which is tough, heat-sealable, semi-rigid and inert with respect to the container contents. The container body and its integral outwardly-extending flange 12A are formed in a single-step injection molding process: the groove 13A in the underface of flange 12A may also be formed during the same operation or during the heat-sealing operation later described.

Adjacent its upper, open end, the external perimeter of the container body 11A is dimensioned and shaped snugly to fit the inner perimeter of the re-usable cover 14A which may be of any suitable material but preferably is of plastic, such as polyethylene, or one of its derivatives, and is preformed by an injection molding operation.

After the body 11A of the container is filled with its desired contents, the open end is closed by the re-usable cover 14A. A second, disposable cover 20A of heat-sealing plastic, such as polyethylene or the like, is subsequently or concurrently applied to bring its integral outwardly extending flange 21A in position to overlie the body flange 12A (Fig. 2). The cover and body flanges 21A, 12A are then heat-sealed to each other to provide a hermetic seal 17A extending completely around the container to prevent access to its contents by contaminants. The second, sealed cover 20A also prevents any accidental dislodgement of cover 14A, and serves, if removed before the container reaches the ultimate user, as an indication of tampering.

The cover 20A may be preformed, as by injection molding, particularly when of substantial thickness; or, alternatively and preferably, the cover 20A may be formed of a thin web of thermoplastic which is heated to permit it to be stretched over and into conformity with cover 14A just prior to its sealing to the body flange 12A.

When the need arises to use any part or all of the container contents, the seal 17A is removed, as by tearing along the weakened line provided by groove 13A of the body flange 12A. If cover 20A is of substantial thickness, it too, is provided with a similar tearing groove around its upper face and opposite the groove 13A. If desired to facilitate tearing off of the seal, either or both of these grooves may have one or more extensions leading out to the outer edge of the container seal: such extensions can most readily be formed by the heat-sealing tools or dies. However, if, as usual and as preferred, the disposable cover 20A is of thin sheet or film of plastic, it need not be so grooved and its removal will accomplish tearing of flange 12A.

The removal of the seal and the disposable cover 20A leaves both the body 11A and the re-usable cover 14A intact (Fig. 3) so that they may be used for storage of the depleted contents of the container or for any subsequent re-use. The inner perimeter of the re-usable cover 14A and the external perimeter of the container body above its flange 12C may be threaded so to provide a mechanical seal which relieves the heat-sealed flanges of the body and disposable cover of strains incident to handling and which after destruction of the hermetic seal by removal of the flanges provides an effective mechanical seal.

Except for differences specifically hereinafter mentioned, the containers 10B, 10C, 10D of Figs. 4 to 10 are generally similar to container 10A of Figs. 1 to 3, and, accordingly, the preceding description is generally similarly applicable thereto. For clarity, the corresponding

elements of the various modifications are identified by the same reference numbers, using however, different letter suffixes for the respective modifications.

Referring to Figs. 4 to 6, the flange 12B of container body 11B is in a plane flush with the open top of the body rather than being displaced below it as in Fig. 1. Also as distinguished from Fig. 1, the internal perimeter of body 11B is shaped and dimensioned tightly to fit the external perimeter of the lower part of cover 14B. After the body portion 11B is filled with the intended contents, it is closed (Fig. 5) by the re-usable cover 14B which is inserted therein with the disposable cover 20B in overlying relation. The flange 12B of the body 11B is then heat-sealed to the flange 21B of the disposable cover 20B so to provide a hermetic seal 17B extending peripherally of the container and having the purposes previously mentioned.

The container seal 17B and the disposable cover 20B may be detached by tearing along the weakened line afforded by groove 13B, or equivalent, leaving the body 11B and the re-usable cover 14B intact for subsequent repeated re-use. The internal perimeter of the body 11B, below the heat-sealing flange 12B, and the external perimeter of the re-usable cover 14B, below its step 15B, may be threaded to provide a seal remaining effective and available after removal of the heat-sealed flanges and which, before removal of the heat-sealed flanges, relieves the hermetic seal provided by them of the mechanical strains incident to handling and transport.

Referring to Figs. 7 to 9, the container body 11C is similar to body 11B of Fig. 4 in that the flange 12C is substantially flush with the open top of the body. However, it differs therefrom in that it is provided with an internal step 15C whose rise-height corresponds with the thickness of the top of cover 14C. The diameter of the cover top is substantially equal to or slightly less than the internal diameter of the open top of the container body so that with the cover 14C in place (Figs. 8 and 9), the cover top is in substantially the same plane as the upper edge of the container body 11C and the heat-sealing flange 12C thereof. The step 15C may be formed by molding the body and thinner wall near the top edge, as in Fig. 7, or molding the body with a top section of the same wall thickness but of larger diameter, as in Fig. 10.

After the container is filled and its open top closed by the re-usable cover 14C, the disposable cover 20C is disposed upon or stretched across the closed top of the container (Fig. 8) and its outer peripheral area or flange is heat-sealed to the body flange 12C so to provide a hermetic seal 17C extending completely around the top edge of the container to prevent access to or loss of its contents. The second or outer cover 20C also holds the inner cover 14C in position with the underface of the top pressed against the horizontal surface of the body step 15C. Therefore the disposable cover also serves to maintain a mechanical seal isolating the container contents from the space between the re-usable cover and the disposable cover.

When access to the container contents is desired, the container seal 17C and the disposable cover 20C are detached as a unit, as by tearing along the weakened line afforded by groove 13C, or equivalent, leaving the body 11C and re-usable cover 14C (Fig. 9) intact for subsequent re-use.

Preferably and as shown, the re-usable cover 14C is provided with a depending flange 16C of diameter substantially equal to or slightly less than the internal diameter of the body 11C below the step 15C. The frictional engagement between the semi-rigid container body and the edge of the cover and/or its flange 16C permits the re-usable cover 14C, after the disposable cover is torn off, to be readily lifted out of the container by a finger grip. In the particular flush-top cover arrangement shown in Fig. 7, the finger grip 18C is provided

by molding the cover with spherical depressions and a cross-bar, as shown. Thus, the top of the container as sealed by the disposable cover 20C presents a flat surface permitting the containers to be stacked, as for shipment and display purposes.

The internal perimeter of the body 11C, below the step 15C, and the external perimeter of flange 16C of the re-usable cover may be threaded as indicated. As in the other modifications, such threaded engagement of the re-usable cover with the container body protects the hermetic seal between the disposable cover and the container body from premature rupture during transport of the sealed container and in subsequent re-use of the container also serves as an effective mechanical seal.

Referring to Figs. 10 to 12, the container body 11D is similar to that of Figs. 4 to 9 in that the flange 12D extends outwardly from the open top of the body rather than, as in Figs. 1 to 3, from a region spaced substantially below the open top. As shown, the flange 12D is inclined downwardly from the open top and may be somewhat concave as molded, so that the flange has a weak inner peripheral tear line or groove 13D at its joiner with the top of the container body. Like the container body 11C of Fig. 7, the container body 11D has an internal step 15D at its open end to support a cover within the container.

The external diameter of the cover 14D is substantially equal to or slightly less than the internal diameter of the upper section of the container body, and the depth of the cover flange 16D is substantially equal to the rise of the body step 15D so that with the cover 14D in place (Figs. 11, 12), the cover top, except for a projecting type of finger grip 18D, when used, is in substantially the same plane as the top edge of the body section 11D and its outwardly extending flange 12D.

With the container filled and closed by the re-usable cover 14D, the disposable cover 20D is disposed or stretched across the closed top of the container and its outer peripheral area or flange is heat-sealed to the body flange 12D. The heat-sealed flanges of the body and disposable cover provide a hermetic seal 17D extending completely around the top edge of the container. The pressure exerted by the film 20D against the projecting cover grip 18D forces the bottom side or edge of the re-usable cover 14D downwardly against the body step 15D so to provide a mechanical seal isolating the container contents from the space between the disposable and re-usable covers. The frictional engagement between the cover flange 16D and the rise of step 15D provides an effective dust-seal after tearing off of the heat-sealed flanges and the disposable cover (Fig. 12) though imposing no significant restraint to removal of the re-usable cover by its finger-grip 18D.

As indicated, the internal perimeter of the body 11D may have a plurality of grooves to receive beads or projections extending from the external perimeter of the re-usable cover 14D. Such threads or bayonet connections relieve the hermetic seal between the body and the disposable cover film of the mechanical strains incident to shipment and handling of the sealed containers and, after removal of the heat-sealed flanges and disposable cover, provides for firm interlocking of the re-usable cover to the container body in the subsequent re-use of the container. So-called snap-threads may also be used in this and the other modifications for such purposes.

If it is desired to have the disposable cover lie flat against the top of the re-usable cover 14D, the central portion of the disposable cover may have a cut-out to clear the projecting finger-grip 18D. Particularly when the disposable cover is so cut away, the containers may be vertically stacked, since the bottom of the container is provided with a recess 22D suitably deeper and wider than the projecting finger-grip.

As in all of the modifications previously described,

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to facilitate initiation of the tearing off of the heat-sealed flanges 17D and the cover 20D as a disposable unit, a groove or weakened line may extend across the body flange 12D from its outer edge to the tear-off groove 13D. Such transverse extension of the tear-off groove 13D may be formed during molding of the container body or during heat-sealing of the disposable cover to the body flange.

What is claimed is:

1. A container comprising a heat-sealable open-ended body having an integral peripheral flange extending outwardly therefrom, a re-usable cover for closing the open end of said container body and freely removable therefrom, said re-usable cover and said body having engageable surfaces, and a disposable cover heat-sealed to said body flange to provide a hermetic seal and extending therefrom over said re-usable cover to press said surfaces of the body and re-usable cover into engagement to provide a mechanical seal between said hermetic seal and the container contents, said heat-sealed flange and said disposable cover being tearable as a unit from the sealed container, leaving its said body and re-usable cover intact for re-use.

2. A container as in claim 1 in which the re-usable cover fits over said open end of the container body with its lower edge engaging the unsealed inner area of said body flange, said lower edge and said flange providing said surfaces pressed into mechanical sealing engagement by said disposable cover as heat-sealed to said body flange.

3. A container as in claim 1 in which the re-usable cover is inserted in said body with its rim overlying the unsealed inner area of said body flange, said rim and flange area providing said surfaces pressed into mechanical sealing engagement by said disposable cover as heat-sealed to said body flange.

4. A container as in claim 1 in which the body has an internal step for engaging the underface of the cover as inserted in the container with the top face of the cover substantially flush with said body flange, said step and underface providing said surfaces which are pressed into mechanical sealing engagement by said disposable cover as heat-sealed to said body flange.

5. A container as in claim 1 in which the upper face of the re-usable cover has a finger-grip covered by said disposable cover as heat-sealed to said body flange.

6. A container as in claim 1 in which said engageable surfaces of the re-usable cover and the container body include thread surfaces.

7. A container comprising a heat-sealable open-ended body having an integral peripheral flange extending outwardly from its open end, a re-usable cover insertable in the open end of said body, said cover and said body having surfaces engageable to limit the extent of insertion of said cover, and a disposable cover overlying said re-usable cover but free of adhesion thereto and having a peripheral flange heat-sealed to said outwardly extending flange of said container body to form a hermetic seal and to maintain mechanical sealing of the re-usable cover and body at their said engageable surfaces, said

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heat-sealed flanges and said disposable cover being tearable as a unit from the sealed container, leaving its said body and re-usable cover intact for re-use.

8. A container as in claim 7 in which the container body has an internal step for receiving the cover and positioning the cover with its top face in the plane of said body flange, and in which said disposable cover as heat-sealed to said body flange extends therefrom substantially in said plane over said reusable cover.

9. A container as in claim 7 in which said cover has a rim projecting over and engaging said outwardly extending body flange, and in which said disposable cover as heat-sealed to said body flange is stretched up and over said rim of the re-usable cover.

10. A container comprising a heat-sealable open-ended body having an integral peripheral flange extending outwardly from its open end, a re-usable cover insertable in the open end of said body, said cover and body having surfaces engageable to limit the insertion of said cover to extent for which the top of said cover is substantially flush with said outwardly extending flange of said body, and a disposable cover overlying said re-usable cover and having a peripheral flange heat-sealed to said outwardly extending flange of the container body to form a hermetic seal and to maintain mechanical sealing of the re-usable cover and body at their said engageable surfaces, said heat-sealed flanges and said disposable cover being tearable as a unit from the sealed container, leaving its body and re-usable cover intact for re-use.

11. A container as in claim 10 in which the container body has an internal step adjacent its open end for engagement by the underside of the cover adjacent its periphery, and in which the cover has a depending flange engaging the internal periphery of said body below said step, said step and flange defining said engageable surfaces of claim 10.

12. A container as in claim 10 in which the cover has a depending flange at its periphery, and in which the container body has an internal step for engaging the outer face and bottom of said cover flange, said step and flange defining said engageable surfaces of claim 10.

13. A container as in claim 10 in which the top face of the re-usable cover is non-adhesively engaged throughout substantially its entire area by the overlying disposable cover.

14. A container as in claim 10 in which the re-usable cover is provided with a finger-grip covered by said disposable cover.

15. A container as in claim 14 in which the finger-grip is below the upper face of said re-usable cover and in which said upper face is engaged throughout substantially its entire area by the overlying disposable cover.

16. A container as in claim 14 in which the finger-grip projects above the upper face of said re-usable cover and in which the disposable cover heat-sealed to said body flange presses against and overlies said projecting finger-grip of the re-usable cover.

No references cited.

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,887,244

May 19, 1959

Thomas E. Betner

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 70, after "disposable" insert -- cover. --.

Signed and sealed this 28th day of June 1960.

(SEAL)

Attest:

KARL H. AXLINE

Attesting Officer

ROBERT C. WATSON
Commissioner of Patents