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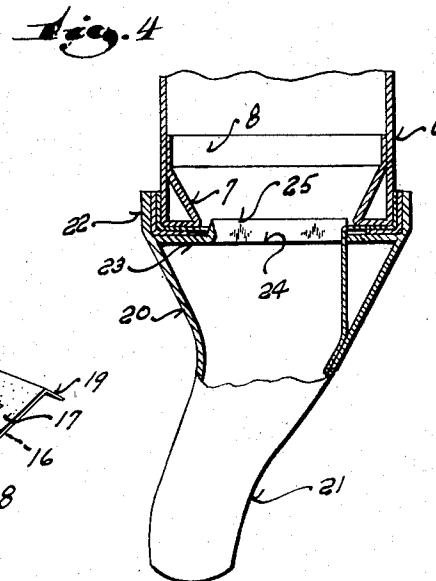
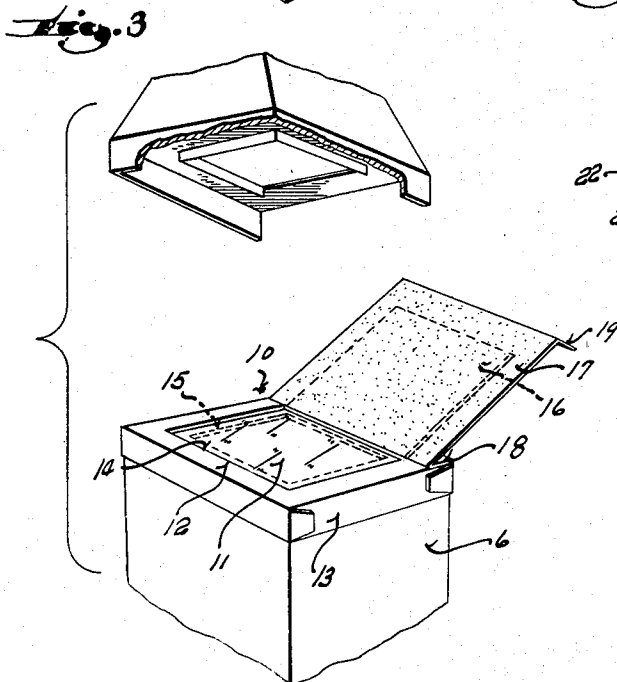
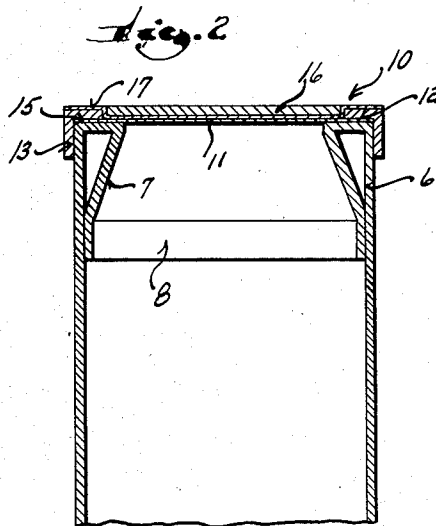
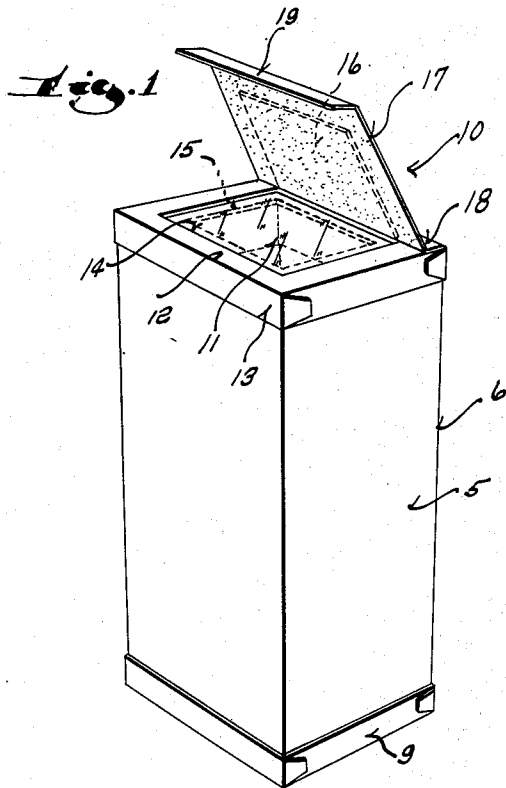
L. C. BROOKS

2,398,405

END CLOSURE FOR PAPER BOARD CONTAINERS

Filed Jan. 20, 1944

2 Sheets-Sheet 1



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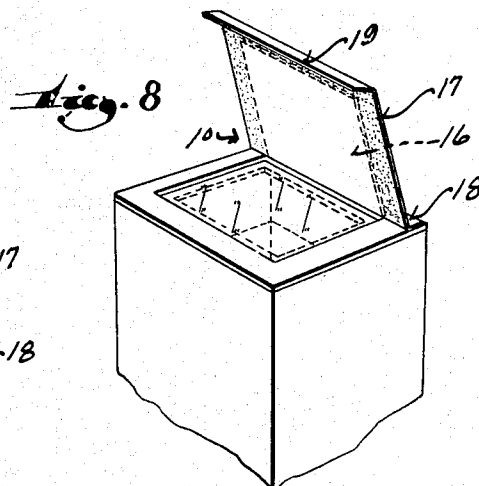
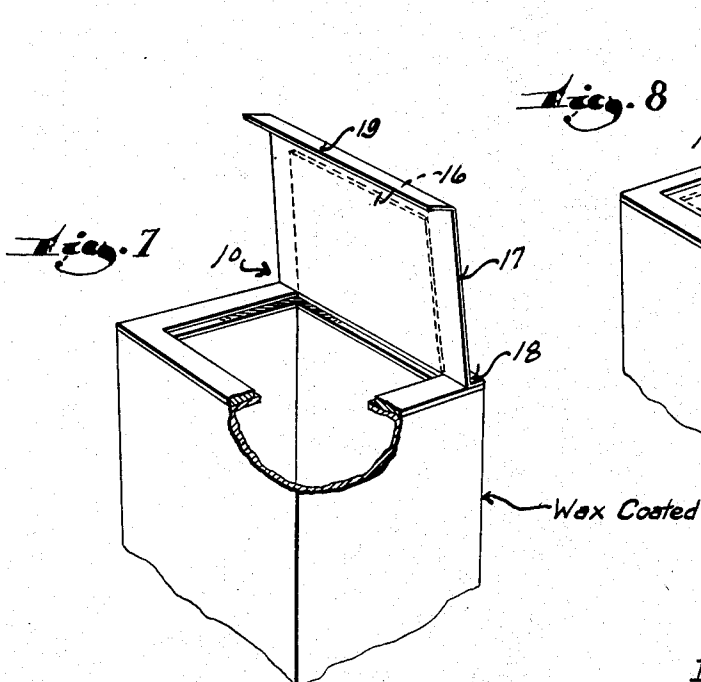
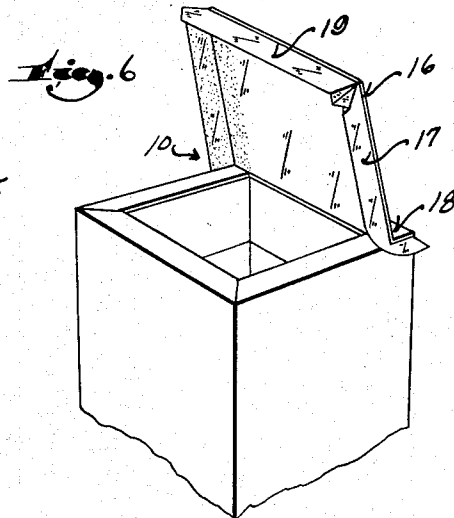
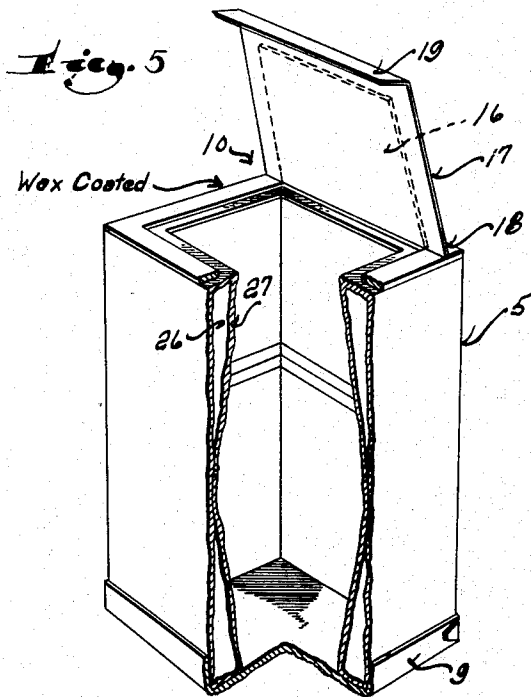
L. C. BROOKS

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END CLOSURE FOR PAPER BOARD CONTAINERS

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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END CLOSURE FOR PAPERBOARD CONTAINERS

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Application January 20, 1944, Serial No. 518,991

8 Claims. (Cl. 229—5.5)

This invention relates to containers made of such materials as heavy paper, fibre, plastics, and thin sheet metal and has particular reference to consumer containers of the type used for household commodities and foods. It is a continuation in part of the invention disclosed in the copending application of Lewis C. Brooks, Serial No. 463,101, filed October 23, 1942.

As fully brought out in said copending application, the containers with which this invention is concerned have a flat sided body generally of rectangular or square cross section, and are characterized by a full opening top. The construction of the container body described and claimed in said copending application enables the attachment of end closure discs in such a manner as to produce a liquid-tight and sift-proof structure.

Through suitable treatment of the paper board or other material from which the container is made, or by lining its wall with a grease-proof sheet material such as Cellophane in the manner described and claimed in the copending application of Lewis C. Brooks, Serial No. 463,099, filed October 23, 1942, the container is adapted for consumer distribution of motor oil and similar products.

The broad object of this invention is to provide end closure, particularly for the top of the container.

Another object of this invention is to provide a top closure so designed that a pouring funnel of the type used by filling station attendants and provided with puncturing knives may be readily and quickly applied to the container to enable emptying its contents in the least possible time.

One of the objections to the use of paper board containers for dispensing motor oils has been the possibility of fragments of the paper container getting into the oil and being carried into the engine.

With this objection in mind, the present invention has as another of its objects to provide a paper board container so designed that no part of the paper walls of the container per se is punctured during the application of the filling funnel. Instead, only a thin sealing sheet is cut in such a way as to produce a full opening top without danger of having any part of the sealing sheet carried along with the oil.

Another object of this invention is to provide a top closure for containers of the character described, which after being opened may be re-closed many times with as much effectiveness as the initial closure.

Still another object of this invention is to pro-

vide an end closure for containers of the character described which utilizes a pressure sensitive adhesive, of which there are many different types on the market, to releasably hold the closure shut.

It is also an object of this invention to provide a container of new and improved construction wherein the sides of its body have a double wall throughout their entire extent to provide a dead air space having insulating value.

With the above and other objects in view, which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claims.

The accompanying drawings illustrate several complete examples of the physical embodiments of the invention constructed according to the best modes so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a perspective view of a container particularly adapted for dispensing motor oil and showing the outer cover raised to afford access to the inner frangible seal;

Figure 2 is a cross-sectional view through the upper end portion of the container shown in Figure 1, but illustrating the cover in its closed position;

Figure 3 is a perspective view showing the top of the container and a portion of the filling funnel in position to be applied to the container;

Figure 4 is a view partly in side elevation and partly in section illustrating the container and funnel in their pouring positions;

Figure 5 is a perspective view with parts broken away and in section showing the double walled container construction; and

Figures 6, 7 and 8 are perspective views of the upper end portion of the container illustrating different specific embodiments of the top closure.

Referring now particularly to the accompanying drawings, in which like numerals indicate like parts throughout the several views, the numeral 5 designates the body of a container constructed in accordance with the aforesaid copending application, Serial No. 463,101.

Its flat side walls have end closure supporting shoulders 6 formed integrally therewith at their opposite ends, preferably in such a manner that the shoulders are supported by diagonal braces 7, the free edges 8 of which constitute anchor strips which are adhered to the side walls.

While this form of shoulder construction is preferable in that it enables complete emptying of the container contents, other forms of shoulder constructions as shown in the aforesaid copending application may be employed.

The bottom closure 9 of the container may be formed in any manner as it forms no part of this invention, unless the same closure is used at both ends of the container. In that case, it would be like the top closure, indicated generally by the numeral 10, now about to be described.

Where the container contents require it, as in the case of motor oils, an inner frangible seal 11 is applied over the mouth of the container under a disc 12 which is suitably secured to the body shoulder. In the construction shown in Figures 1 to 4, inclusive, the disc 12 has side flanges 13 extended down over and adhere to the side walls as shown.

The sealing disc 11 may, if desired, likewise be extended over the sides of the body, or it may extend only across the top of the container. In any event, it is preferable to adhere the sealing sheet 11 to the underside of the disc 12 before the disc is applied to the container body.

As stated, the thin inner seal 11 is frangible or capable of being easily punctured to afford access to the contents. It may be made of any suitable material but for use with motor oil a grease-proof substance like Cellophane should be used.

The disc 12 has its central portion cut away to leave a hole 14 which is larger than the opening defined by the inner edges of the shoulders 8. Hence, when the disc 12 is in position, the inner marginal portions of the shoulders 8 are exposed to provide a ledge 15. This ledge supports an insert or cap 16 of a size to fit snugly into the opening 14 with a thin outer sealing sheet 17 interposed therebetween.

The outer sealing sheet 17 is of material such as cellulose film, Pliofilm, Koroseal, Saran, Scotch tape, parchment or thin kraft paper.

One edge portion 18 of this outer sealing sheet is permanently adhered to the adjacent part of the disc 12 to provide a hinge and the opposite marginal edge portion 19 which forms a flange or flap is adapted to be releasably adhered to the front wall of the container.

The sheet 17 is bonded to the under side of the insert or cap 16, so that when the insert or cap 16 is pushed down into place, the thin sealing sheet 17 is squeezed into a double L shaped rabbet on all sides and thus provides a secure closure.

The under surface of the sheet 17, for an appropriate distance in from its edges is coated with grease-proof thermoplastic such as Vinyseal so that in sealing the container for shipment, the application of proper heat and pressure adheres the sheet 17 securely to the disc 12 and to the ledges 15 of the shoulders 8 as well as the front wall of the container.

If desired, flanges similar to the flange or flap 19 may be provided along the side edges of the sheet 17 as shown in Figure 6, to be adhered to the side walls of the container. However, for dispensing motor oil, it is preferable to employ the construction shown in Figure 1. This construction affords quick and easy access to the inner seal 11 by grasping the edge of the flange or flap 19 and peeling the same off the front wall of the container the sheet 17 with the outer cap thereon may be quickly peeled back or ripped off to expose the inner frangible seal 11.

If the sealing sheet 17 is a thermoplastic such as Pliofilm or Koroseal, no coating is necessary

as these materials will adhere to a properly prepared surface merely upon the application of heat and pressure.

For dispensing motor oil, a funnel 20 is provided. This funnel has the customary discharge spout 21 insertable into the crankcase filler tube, and its upper end 22 of such size and shape as to snugly fit the top of the container. A transverse wall 23 spaced down from the upper edge of the funnel provides a ledge to support the container in its inverted position. This transverse wall has an opening 24 slightly smaller than the mouth of the container defined by the inner edges of the shoulders 8. Knives 25 project from the wall or ledge 23 along three edges of the opening 24 to cut through the inner seal 11 upon the application of slight pressure.

Cutting the inner seal at three edges only leaves the fourth edge of the opening uncut and insures that no part of the inner seal 11 will be carried along with the oil.

Thus, in practice the filling station attendant merely rips off the top cover to expose the inner seal 11, applies the funnel in the manner defined and inserts the same into a filler spout or tube; or if desired, the funnel may be inserted first and the container applied to the funnel in inverted position. The latter procedure has the advantage of preventing spilling any of the oil as the container is left sealed until it is in position for emptying.

The size of the hole cut into the inner seal by the knives 25 is slightly smaller than the open end of the container, and the side walls of the funnel so hold the container that there is no danger of cutting into the paper board of the container.

There are several pressure sensitive adhesives on the market which remain as such for a considerable length of time even though they are repeatedly reused. Scotch tape is an example of this type of product. It can be employed to great advantage with the present invention, particularly in those cases where an inner seal 11 is used as the outer sealing sheet 17.

For products such as tobacco and coffee, the construction shown in Figure 8 is especially suitable. Here the marginal edge portions of the sheet 17 are coated with a suitable pressure sensitive adhesive which enables the cover to be reclosed to protect the contents after the inner seal 11 has been broken, but leaves that portion of the sealing sheet exposed to the container contents in its natural non-adhesive condition.

The container illustrated in Figure 5 differs from those of the aforesaid copending applications in that the body walls are of double thickness, thereby affording an insulating dead air space 26. This construction results from extending the diagonal shoulder supporting walls 27 to the middle of the container where their anchor strips are adhered to the outer wall in abutting relation.

The method of making this container is the same as that employed in making the diagonal shoulder as shown and claimed in the aforesaid copending application, Serial No. 463,101.

The double wall construction is particularly advantageous as a gallon size milk container for it permits the use of the same thin board used in quart size paper board containers. It is also desirable for such products as vegetable compounds, lard, cottage cheese, and etc., as it provides a smooth inside surface for the container entirely free from projections to interfere with

removal of the product, while at the same time affording a full opening for ready access.

The closure of the double walled container shown in Figure 5 and also the container shown in Figure 7 have been indicated as coated with wax to show its application to containers for dairy products. In this case it is obvious that sealing is effected by merely applying heat to the proper surfaces.

From the foregoing description, taken in connection with the accompanying drawings, it will be readily apparent to those skilled in the art that this invention provides a closure for containers of the character described which is not only very efficient in use, but has the advantage of requiring a minimum of low cost materials and of being readily adapted to manufacture on high speed production machinery.

What I claim as my invention is:

1. An end closure construction for flat sided containers, comprising: shoulders on the side walls flush with the ends thereof to provide a uni-planar supporting surface extending around and defining the open end of the container; a disc adhered in position on said uni-planar supporting surface, said disc having a hole therethrough of a size larger than the opening defined by the inner edges of the shoulders so that a ledge is left along the edges of the hole in said disc; a disc-like insert of a size to snugly fit the hole in the disc, supported on said ledge; and a sheet of thin flexible sealing material adhered to the under side of said insert and to the top side of said disc so as to provide an external seal completely surrounding said hole in the disc, said sheet of thin flexible sealing material being squeezed between the edges of the insert and the edges of the hole in the disc, and said insert lying close to the plane of the disc.

2. An end closure construction for flat sided containers, comprising: shoulders on the side walls flush with the ends thereof to provide a uni-planar supporting surface extending around and defining the open end of the container; a disc adhered in position on said uni-planar supporting surface, said disc having a hole therethrough of a size larger than the opening defined by the inner edges of the shoulders so that a ledge is left along the edges of the hole in said disc; a disc-like insert of a size to snugly fit the hole in the disc, supported on said ledge; a sheet of thin flexible sealing material adhered to the under side of said insert and to the top side of said disc, said sheet of thin flexible sealing material being squeezed between the edges of the insert and the edges of the hole in the disc, and said insert lying close to the plane of the disc; and an inner sealing sheet of thin flexible material impervious to the contents of the container confined between the uni-planar supporting surface and the disc and stretched across the open end of the container.

3. An end closure construction for flat sided containers comprising: shoulders on the side walls flush with the ends thereof to provide a uni-planar supporting surface extending around and defining the open end of the container; a disc adhered in position on said uni-planar supporting surface, said disc having a hole therethrough of a size larger than the opening defined by the inner edges of the shoulders so that a ledge is left along the edges of the hole in said disc; a disc-like insert of a size to snugly fit the hole in the disc, supported on said ledge; and a sheet

of thin flexible sealing material of a size to engage over the top face of the disc, said flexible sheet being adhered to the under side of said insert and having a pressure sensitive adhesive under surface at least at those portions which overlie the uni-planar supporting surface and the top face of the disc for releasably holding the sealing sheet down on the disc and supporting surface with the insert in the hole of the disc and substantially co-planar with the disc so that the sealing sheet is squeezed between adjacent edges of the insert and the hole in the disc.

4. An end closure construction for flat sided containers comprising: shoulders on the side walls flush with the ends thereof to provide a uni-planar supporting surface extending around and defining the open end of the container; a disc adhered in position on said uni-planar supporting surface, said disc having a hole therethrough of a size larger than the opening defined by the inner edges of the shoulders so that a ledge is left along the edges of the hole in said disc; a disc-like insert of a size to snugly fit the hole in the disc, supported on said ledge; a sheet of thin flexible sealing material adhered to the under side of said insert and of a size to extend beyond the edges of the insert and over the top side of said disc, one edge portion of the sheet being bonded to the surface of the disc which it overlies so that the sheet with the insert thereon is hinged to the disc to swing to and from a closed position; and pressure sensitive adhesive on the under side of the sheet at least at its remaining marginal portions for releasably adhering the sheet to the disc with the insert in the hole of the disc and the sealing sheet squeezed between the edges of the hole and the insert.

5. A container for motor oil comprising: a body having flat side walls; a bottom closure secured to said side walls and closing the bottom of the container; a shoulder formed integrally with the side walls and extending about the open top of the body to define a uni-planar supporting surface flush with the top of the body; a disc adhered in place on said uni-planar supporting surface, said disc having a hole larger than the opening defined by the inner edges of said shoulders so that said shoulders provide a ledge along the marginal edges of the hole in the disc; a thin grease-proof sealing sheet interposed between said disc and the shoulders and stretched across the opening defined by the inner edges of the shoulders; an insert of a size to snugly fit in the hole in said disc; and an outer sealing sheet of thin flexible material adhered to the under side of said insert and extending out over the top side of the disc, said outer sealing sheet being adhered to the top side of the disc and the insert being pushed down into the hole in the disc and being supported on said ledge so that the outer sealing sheet is squeezed and crowded between the edges of the insert and the hole in the disc.

6. A container for motor oil, comprising: a body having flat side walls; a bottom closure secured to said side walls and closing the bottom of the container; a shoulder formed integrally with the side walls and extending about the open top of the body to define a uni-planar supporting surface flush with the top of the body; a disc adhered in position on said uni-planar supporting surface, said disc having a hole larger than the opening defined by the inner edges of said shoulders so that said shoulders provide a ledge along the marginal edges of the hole in the disc; a thin grease-proof sealing sheet interposed between

said disc and the shoulders and stretched across the opening defined by the inner edges of the shoulders; an insert of a size to snugly fit in the hole in said disc; an outer sealing sheet of thin flexible material adhered to the under side of said insert and extending out over the top side of the disc, said outer sealing sheet being adhered to the top side of the disc, and the insert being pushed down into the hole in the disc and being supported on said ledge so that the outer sealing sheet is squeezed and crowded between the edges of the insert and the hole in the disc; and a flap on said outer sealing sheet extending down over one side of the container body and releasably adhered thereto for facilitating the ripping off of said outer sealing sheet and insert to expose the inner sealing sheet, said inner sealing sheet being readily punctured by an appropriate tool to permit the discharge of the container contents.

7. A unitary end closure for flat sided containers having a uniplanar supporting surface perpendicular to the sides of the container bounding and defining the open end of the container comprising: a disc of a size to at least cover said uniplanar supporting surface, said disc having an aperture therein the sides of which at least at two connecting sides of the container are substantially parallel to but lie between the inner and outer boundaries of said supporting surface when the disc is superimposed over said supporting surface so that the disc and said supporting surface at said connecting sides of the container

cooperate to produce a stepped-down ledge at the open end of the container; a flat insert of a size to snugly fit the aperture in the disc so that at least two sides of the insert are supported on said ledge when the cover is applied to the container; a sheet of flexible sealing material adhered to the underside of the insert with portions thereof adapted to be squeezed between the edges of the insert and the edges of the aperture in the disc; means for adhering the flexible sealing sheet to the top side of the disc to enable sealing of the aperture in the disc; and means for bonding the disc to the entire uniplanar supporting surface so as to enable attachment of the cover to the open end of the container.

8. A full opening end closure construction for closing the mouth of a container having rigid upright side walls, comprising: means on said side walls defining a rim and a ledge extending around the mouth of the container with the ledge projecting inwardly and stepped-down from the top of the rim; a relatively thin flexible sealing sheet extending across the mouth of the container and overlying the rim and ledge, said sheet having a pressure sensitive adhesive on the underside thereof by which the sheet is adhered to the stepped-down ledge and the top of the rim; and a relatively stiff insert of a size to fit snugly inside the rim and pressed down onto said sealing sheet to hold the same down on the ledge with the sealing sheet squeezed between the edges of said insert and the inside of the rim.

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