Oct. 30, 1945. T. B. CASEY 2,387,978

CLOSURE FOR VESSELS

Filed July 30, 1943

Fig. 1.

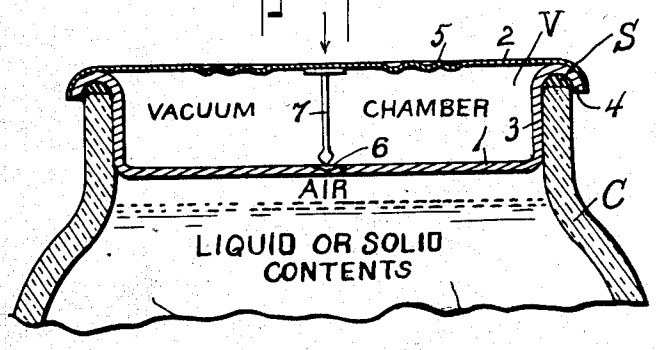


Fig. 2.

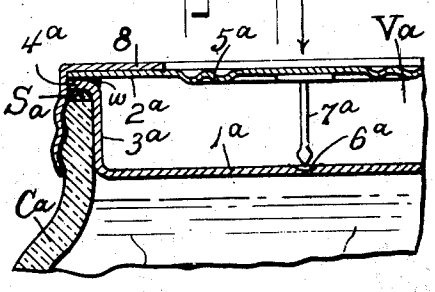


Fig. 3.

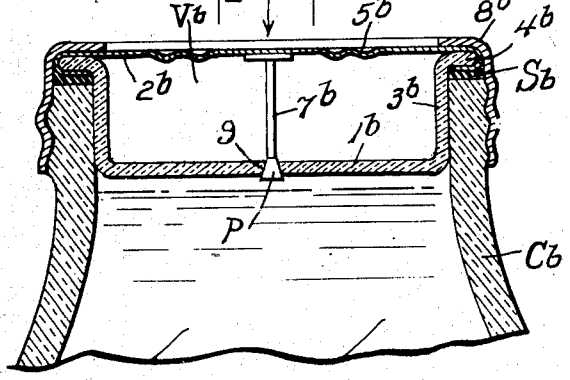


Fig. 4.

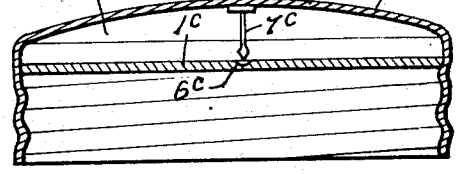


Fig. 5.

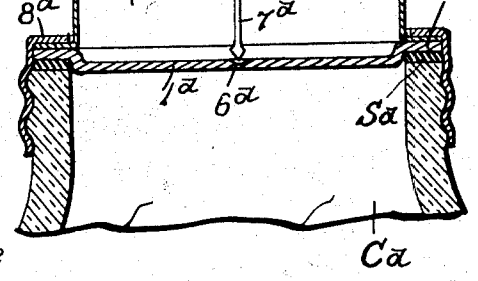


Fig. 8.

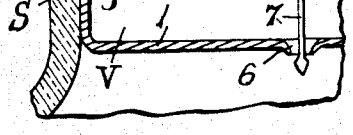


Fig. 7.

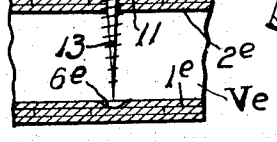
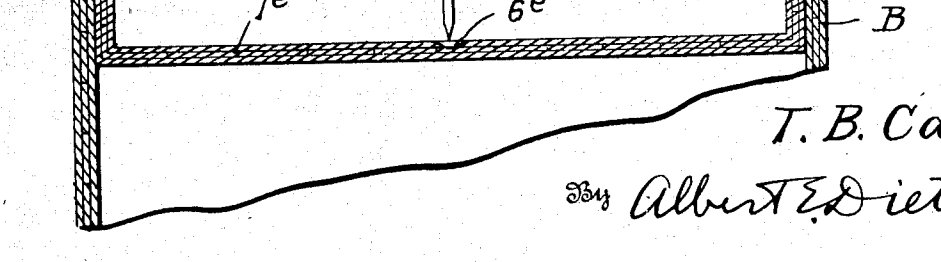


Fig. 6.



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Patented Oct. 30, 1945 2,387,978

UNITED STATES PATENT OFFICE

2,387,978

CLOSURE FOR VESSELS

Terrance B. Casey, Ashland, Ky.

Application July 30, 1943, Serial No. 496,800

9 Claims. (Cl. 215—38)

My invention relates to covers for bottles, jars, barrels, boxes, etc., where an air-tight closure is required.

Primarily the invention has for its object to provide a self-sealing cover especially for home-canned and packed food, either liquid or dry.

A further object is to provide a cover for vessels which can be applied in the usual ways and, after the cover is in place, held there by external air pressure.

Again, it is an object to provide a cover by the use of which any air remaining in the vessel after processing and applying the cover in the usual manner, may be rarified after the cover has been applied.

Another object is to provide a lid or cover for containers, which can be used in any and all methods or processes of canning foods.

Other objects will in part be obvious and in part pointed out hereinafter.

To the attainment of the aforesaid objects and ends the invention still further resides in the novel details of construction, combination and arrangement of parts, all of which will be first fully described in the following detailed description, and then be particularly pointed out in the appended claims, reference being had to the accompanying drawing, in which:

Fig. 1 is a vertical section illustrating one embodiment of my invention.

Fig. 2 is a detail vertical section of a modification of the embodiment shown in Fig. 1.

Fig. 3 is a view similar to Fig. 1 of a third embodiment of the invention.

Fig. 4 is a vertical section of a Mason-type cap embodying the invention.

Fig. 5 is a vertical section of a fourth embodiment of the invention.

Fig. 6 is a vertical section showing the invention embodied in a barrel or box cover.

Fig. 7 is a detail vertical section of a modification of the embodiment shown in Fig. 6.

Fig. 8 is a detail view showing how the embodiment of Fig. 1 is operated.

In the drawing, in which like numerals of reference indicate like parts in all the figures, 1 represents the inner or bottom wall, 2 the outer or top wall, and 3 the peripheral wall of the top or cover. The walls 1 and 3 are preferably made sufficiently heavy so as to be relatively rigid, while the wall 2 is made so as to be more or less flexible, and to that end it may be provided with circular corrugations 5 if desired.

The inner wall 1 preferably has a weakened portion 6, directly over which and secured to the wall 2, by soldering or any other suitable means, is a pin 7 having, preferably, a spear-shaped end for puncturing the wall 1 at the weakened place 6 for a purpose which will later appear.

There are several ways in which the cover may be constructed to fit the vessel C to be closed. In the form shown in Figs. 1 and 8, the wall 3 has its upper margin turned outwardly, as at 4, to provide a trough for the packing ring or sealing compound S.

The outwardly turned portion 4 serves as a flange to overlie the mouth or rim edge of the vessel C, while the wall 3 fits inside the neck of the vessel as shown.

The walls 2 and 3—4 are hermetically joined in any approved way, as by soldering, brazing, welding, etc. After the wall 2 is hermetically secured to the flange 4, the space between the walls 1 and 2 is evacuated. This may be done in any approved manner, as, for instance, in a manner similar to the evacuating of electric light bulbs. As the particular way in which the air in chamber V is withdrawn and the chamber thereafter sealed against ingress of air is no part of the present invention, the same has not been illustrated in the drawing and will not be further referred to herein.

After evacuation of the air, chamber V becomes what I shall hereinafter term a vacuum chamber.

After packing the vessel C with the desired material—solid, as coffee for example, or liquid, as fruit or vegetables suitably processed, for example—the cover is put in place and pressed down tightly. Then pin 7 is driven through the inner wall 1 (see Fig. 8) and the air below the wall 1 in the vessel C, above its desired contents, is sucked into the vacuum chamber V, thereby providing the vacuum seal for the cover against the vessel mouth, sufficient to hold the cover hermetically to the vessel C.

If desired, the modification shown in Fig. 2 may be employed. In this form the flange 4^a is flat and overlies the mouth edge of the vessel C^a, a suitable packing or sealing ring S^a being provided and, if desired, a threaded cap 8 may be screwed onto the vessel to prevent accidental breaking of the seal.

In the modification of Fig. 3, the inner rigid wall 1^b, annular wall 3^b and flange 4^b are formed of glass, porcelain, or plastic, while the wall 2^b is of flexible material, such as metal or other suitable substance.

The wall 1^b has an aperture 9 which is closed by a plug P which plug may be driven out by the pin 7^b when pressure is applied in the direction

of the arrow in Fig. 3. If desired the pin and plug may be made as separate parts or they may be made integral. The latter structure being preferable where to leave the plug in the vessel would be objectionable.

Fig. 4 shows a modification of the invention adapting it to a Mason-type jar cover.

Fig. 5 is a modification in which the vacuum chamber extends outwardly of the vessel.

In Figs. 6 and 7 the invention is shown applied to a box or barrel-like receptacle B. In this form the cover is constructed entirely of plywood. It carries a sealing washer 11 of suitable composition held in place, if desired, by a bezel 12 and through which a nail 7e may be driven (Fig. 6) or a screw 13 screwed through the same and through the wall 2e (Fig. 7), for the purpose of forming an opening in the wall 1e at the proper time.

In Figs. 2 to 6, inclusive, those parts which correspond to one another and to similar parts in Figs. 1 and 8, bear the same reference character plus the index letter *a, b, c, d, e,* as the case may be, and further detailed description of said figures is therefore thought to be unnecessary. The operation of these modifications is, in principle, the same as that of Figs. 1 and 8, save that in Figs. 6 and 7, the outer wall 2e is or may be, rigid, as the nail or screw is longitudinally movable when force is applied to advance the same through the bottom 1e.

To remove the cover it is only necessary to puncture the wall 2, 2a, 2b, 2c, 2d, as the case may be, by using any sharp or pointed instrument, or to withdraw the nail or screw (Figs. 6 or 7). This will break the seal and the cover can then be lifted off the vessel. This eliminates the use of can openers or special tools.

The lid or cover is equally adapted to square, round, or any angled or curved shape of contour of the container or vessel opening.

While I have shown and described several materials that can be used in the construction of my cover or lid, I do not wish to be limited thereto, as any other suitable materials may be employed, and the lid may be made up in any suitable or convenient way, depending upon the materials employed.

From the foregoing description taken in connection with the accompanying drawing, it is thought that the complete construction and the uses and advantages of my invention will be clear to those skilled in the art.

What I claim is:

1. A container having air therein; a cover for said container, comprising a body to fit over the mouth of the container, and having a chamber evacuated of air one wall of which chamber is adjacent the interior of the container, and means for puncturing said wall after the body is in place on the container.

2. A container having air therein; a cover for said container, comprising a body to fit over the mouth of the container, and having a chamber evacuated of air one wall of which chamber is adjacent the interior of the container, and means for puncturing said wall after the body is in place on the container, said means comprising an element carried by another wall of the body and adapted to be advanced to puncture the first mentioned wall of the body.

3. A container having air therein; a cover for said container, comprising a body to fit over the mouth of the container, and having a chamber evacuated of air one wall of which chamber is adjacent the interior of the container, and means for puncturing said wall after the body is in place on the container, said means comprising a nail passed through another wall of said body in position to be driven through the first mentioned wall of the body.

4. A container having air therein; a cover for said container, comprising a body to fit over the mouth of the container, and having a chamber evacuated of air one wall of which chamber is adjacent the interior of the container, and means for puncturing said wall after the body is in place on the container, said means comprising a screw passed through another wall of said body in position to be driven through the first mentioned wall of the body.

5. A vessel having air therein; a cover for vessel, comprising an inner wall, an annular wall and an outer wall hermetically secured together to provide a chamber, said lid including a flange to fit on the mouth edge of the vessel and having a sealing substance under said flange, said chamber being evacuated of air to constitute a vacuum chamber, and means operable via said outer wall for puncturing said inner wall at will.

6. A vessel having air therein; a cover for vessel, comprising an inner wall, an annular wall and an outer wall hermetically secured together to provide a chamber, said lid including a flange to fit on the mouth edge of the vessel and having a sealing substance under said flange, said chamber being evacuated of air to constitute a vacuum chamber, and means operable via said outer wall for puncturing said inner wall at will, said means comprising a pin secured to said outer wall and having a puncturing end.

7. A vessel having air therein; a cover for vessel, comprising an inner wall, an annular wall and an outer wall hermetically secured together to provide a chamber, said lid including a flange to fit on the mouth edge of the vessel and having a sealing substance under said flange, said chamber being evacuated of air to constitute a vacuum chamber, and means operable via said outer wall for puncturing said inner wall at will, said means comprising a pin secured to said outer wall and having a puncturing end, said inner wall having a weakened portion to receive the end of said pin.

8. As a new article of manufacture, a cover for vessels, comprising a body to fit over the mouth of the vessel and having an air-evacuated chamber closed to atmosphere, one wall of said chamber lying on the vessel side of the body to communicate with the interior of the vessel when the cover is in place, and means within said chamber for puncturing said one wall at will.

9. As a new article of manufacture, a cover for vessels, comprising a body formed to fit over and close the mouth of a vessel, said body having an air-evacuated closed chamber one wall of which is located to lie opposite the interior of the vessel on which it is to be used, and means within said chamber for effecting a puncturing of said one wall at will.

TERRANCE B. CASEY.