Sept. 20, 1938. T. W. PHILLIPS 2,130,651

CLOSURE FOR CANISTERS, BOXES, CANS, JARS, AND THE LIKE CONTAINERS

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Fig. 1.

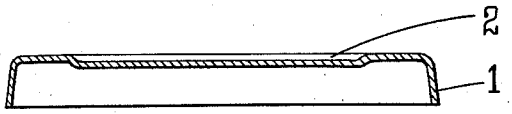


Fig. 2.

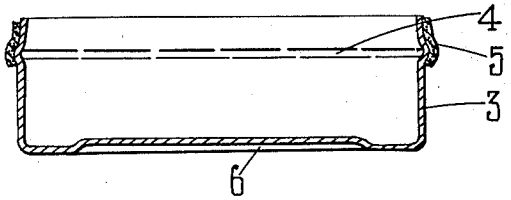


Fig. 3.

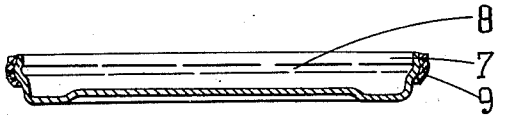


Fig. 4.

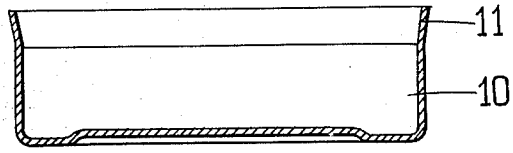


Fig. 5.

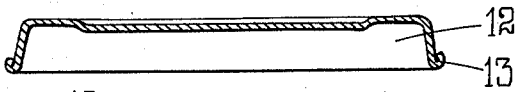


Fig. 6.

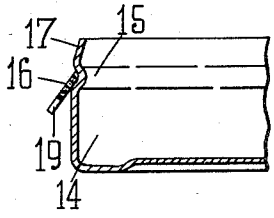


Fig. 7.

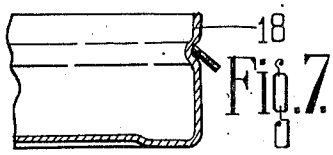
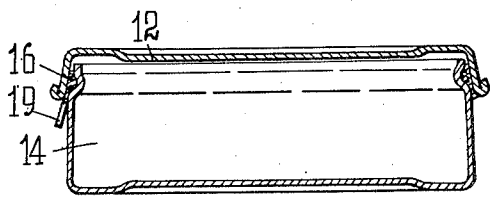


Fig. 8.



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Fig. 9.

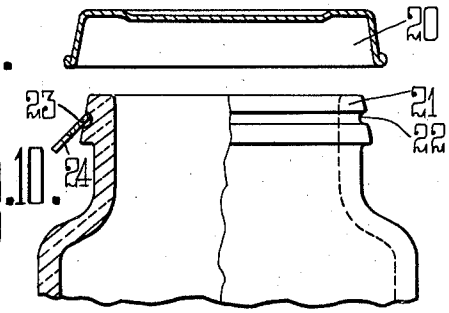


Fig. 10.

Fig. 11.

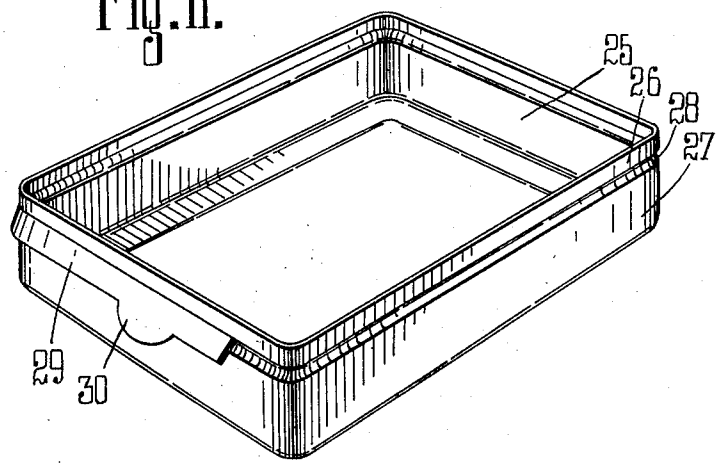
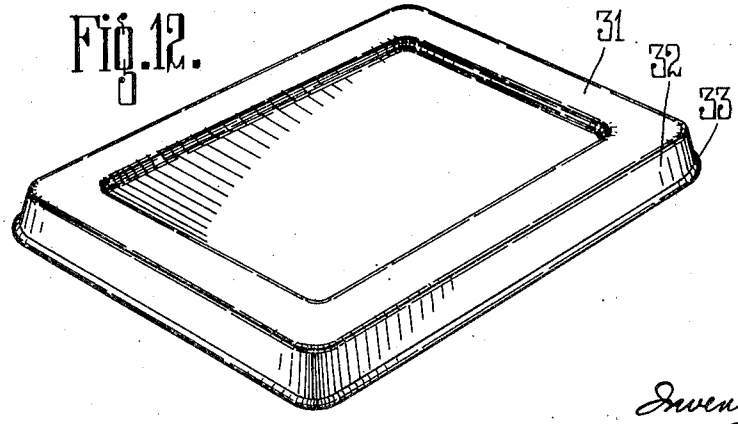


Fig. 12.



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Patented Sept. 20, 1938

2,130,651

UNITED STATES PATENT OFFICE

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CLOSURE FOR CANISTERS, BOXES, CANS, JARS, AND THE LIKE CONTAINERS

Trevor Watts Phillips, London, England, assignor of one-half to Vacseal Containers Limited, London, England, a British company

Application June 19, 1936, Serial No. 86,180
In Great Britain February 10, 1936

4 Claims. (Cl. 220—46)

The present invention relates to improvements in closures for boxes, cans, jars and the like containers, made of metal, glass, earthenware, phenol condensation product, or other suitable material.

According to the present invention a closure is provided for a box, can, jar, or the like container in which a flat elastic band is interposed between surfaces on the skirt of a cap and the rim of a container respectively, one or both of which are tapered or inclined at a small angle to the walls of the container, being less than the angle of friction of the material of container or cap with rubber so that the cap becomes wedged upon the container in the act of application of the cap to the container, and may be firmly held thereon by a partial vacuum within the container.

The invention is more particularly described with reference to the accompanying drawings in which:—

Figure 1 is a sectional elevation of one form of cap applicable to a container shown in sectional elevation in Figure 2.

Figure 3 shows a modified construction of cap in sectional elevation applicable to the container shown in Figure 4 in sectional elevation.

Figure 5 shows a modified form of cap applicable for use with a container as shown in part sectional elevation in Figures 6 or 7.

Figure 8 shows the cap of Figure 5 assembled with the container of Figure 6 in sectional elevation.

Figure 9 shows a form of cap suitable for application to a jar shown in part sectional elevation in Figure 10, the packing ring being removed from the right-hand part of the figure for clearness.

Figure 11 is a perspective view of a rectangular container, the packing ring being partly removed.

Figure 12 is a perspective view of a cap for use with a container as shown in Figure 11.

A cap 1 stamped from sheet metal, taken by way of example, may be provided with the usual depression 2 for strengthening purposes. The skirt 1 of this cap is slightly tapered; that is to say, in cross-section lies at an angle which is at a slight angle to the normal to the plane of the top of the cap. This angle is always less than the angle of friction between the material of the cap, glass, metal or a condensation product, and rubber. The body of the container 3 may have an external rib 4 formed by grooving its interior as shown, by a spinning or the like operation, and may either have its rim tapered slightly inwards as shown, or vertical; that is to say, in the same plane as the side walls of the container 3. Over the peripheral rib is applied an elastic packing ring 5, which may be preferably formed with a pull tab, such as shown at 30, Figure 11, the ribs serving to hold the rubber band firmly on the container, whilst the cap 1 is applied thereto, and during, for instance, a sealing process, such as the known vacuumizing method of sealing, whereupon the cap is drawn tightly down by a difference in pressure between the outside of the closed container and a partial vacuum inside, so that the cap becomes firmly wedged upon the projecting part of the rubber band to form a hermetic seal, which seal can be broken by pulling on the pull-out tab connected to the rubber band where so provided, or alternatively, by puncturing either the cap 2 or the container 3.

In the modified form of construction shown in Figures 3 and 4, the cap 7 is inverted or dished and provided with an internal groove 8 which forms an external rib for holding securely thereon a rubber band 9, which may again be provided, if desired, with a pull tab, such as 30, Figure 11.

The container 10 may have either a straight side or be flared or dished at a slight angle as shown at 11, so that on application of the cap this becomes securely wedged within the container, and if held by a vacuum, this can be broken by either puncturing the cap 7 or by pulling out the rubber band from the packing surfaces by means of a pull-out tab thereon.

In connection with the constructions of Figures 5 and 6, the cap 12 with a vertical or a flared skirt, which may be beaded as shown at 13, is applied to a container 14, the rim 17 of which is flared inwardly and the container is provided with an internal rib 15 forming the external groove for accommodating one edge of a rubber band 16, provided with a pull-out tab 19. As with the prior constructions the rim of the container 14 need not be flared, as shown at 17, but might be in the same plane as shown at 18, Figure 7. When the parts are assembled as shown in Figure 8, the lid or cover 12 can be secured firmly on the container by an automatic wedging action, and if held by an internal partial vacuum this can be released to allow removal of the cap 12 by means of tension on the pull-out tab 19.

Figures 9 and 10 show the application to a jar or bottle, the finish 21 of which, is provided with a groove 22, for the reception of one edge of an annular rubber packing ring 23, which may be provided with a pull-out tab 24, so that on application of the cap 20 having a flared rim or

skirt, this is held securely thereon to form, if vacuumized, a completely hermetic closure.

The closure of this invention is applicable to containers shown in Figures 1 to 10, of circular cross-section, and is equally applicable to containers of non-circular cross-section, such as oval containers, or again, square or rectangular containers as shown in Figures 11 and 12, in which a container **25**, taken by way of example, has a vertical rim **26** parallel with its side walls **27**, and is provided with an external groove **28** for the reception of one edge of a packing ring **29** provided with a pull-out tab **30**, this container co-operating with a cap **31**, the flared skirt **32** of which may be beaded as shown at **33**.

It will be appreciated that either the rim of the container or the skirt of the cap, in any of the constructions above described may be tapering, whilst the other is vertical, but it will be preferred normally to arrange that both surfaces are of substantially equal taper and less than the coefficient of friction of rubber with glass, metal, artificial resin, or other material of the cap or container.

It will further be seen that the closure of the present invention enables the cap to be held firmly upon the container, even after the vacuum seal or the like has been broken, as the cap can be again wedged upon the body of the container to be held frictionally thereon. This may be effected either with or without the rubber ring in position.

It will be noticed that the packing surfaces of the closure of the present invention being arranged at a slight angle to the vertical; that is to say, to the side walls of the container, enables the packing to be applied to containers other than those of circular cross-section, as in the case of metal containers the material is not distorted in the operation of manufacture of the packing rim or flange, as is of necessity the consequence where packing takes place on flange surfaces formed on the container or cap, or both, which have to be turned up at a right angle or at a wide angle to the side walls of container or cap.

I declare that what I claim is:

1. A closure for containers comprising a container, a cap, and a flat rubber packing ring, said container having a peripheral shoulder thereon with a peripheral groove contiguous thereto above the shoulder, said ring being mounted with one edge received in and indexed by said groove, with the portion of the ring intermediate its edges extending over said shoulder to differentially tension the same, and the other edge of the ring being unrestrained, and said cap having a flared rim adapted to engage said ring where it is tensioned over the shoulder to form a self-accommodating packing therewith, the angle of flare of said ring being less than the angle of friction of the material of said cap to rubber.

2. A closure for containers comprising a container, a cap, and a flat rubber packing ring, said container having a peripheral shoulder thereon with a peripheral groove contiguous thereto above the shoulder, said ring being mounted with one edge received in and indexed by said groove, with the portion of the ring intermediate its edges extending over said shoulder to differentially tension the same, and the other edge of the ring being unrestrained, said cap having a flared rim adapted to engage said ring where it is tensioned over the shoulder to form a self-accommodating packing therewith, the angle of flare of said ring being less than the angle of friction of the material of said cap to rubber, and said container having a flared rim above said groove, of equal angle to the flare of the cap rim, to permit sealing of cap on container when the ring is removed.

3. A closure for containers comprising a container, a cap, and a flat rubber packing ring, said container having a peripheral shoulder thereon with a peripheral groove contiguous thereto above the shoulder, said ring being mounted with its upper edge received in and indexed by said groove, with the portion of the ring intermediate its edges extending over said shoulder to differentially tension the same, and the lower edge of the ring being free and unrestrained, and said cap having a flared rim adapted to engage said ring where it is tensioned over the shoulder to form a self-accommodating packing therewith, the angle of flare of said ring being less than the angle of friction of the material of said cap to rubber, and said ring having a downwardly extending tab on its lower edge.

4. A closure for containers comprising a container part, a cap part and a flat rubber packing ring, one of said parts having a peripheral shoulder over which a portion of said ring intermediate its edges is positioned so that said ring is thereby differentially tensioned, whilst however, its edges are free, the other of said parts having a truncated conical flange adapted to engage that part of the ring lying on said shoulder to form a self-accommodating packing therewith, the angularity of the surface of said flange being less than the angle of friction of the material of which it is composed, and rubber.

TREVOR WATTS PHILLIPS.