H. M. EPSTEIN.

CLOSURE.

APPLICATION FILED NOV. 4, 1916.

1,222,373.

Patented Apr. 10, 1917.

Fig. 1.

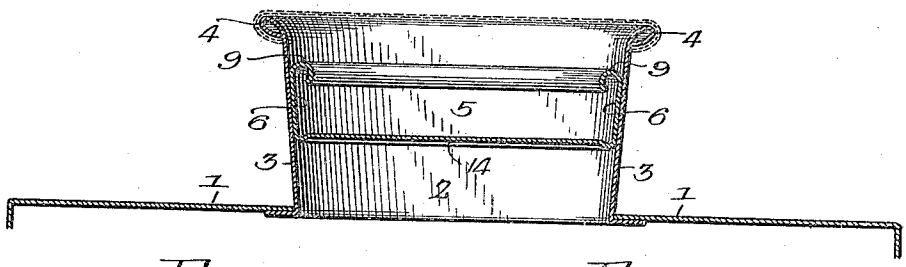


Fig. 2.

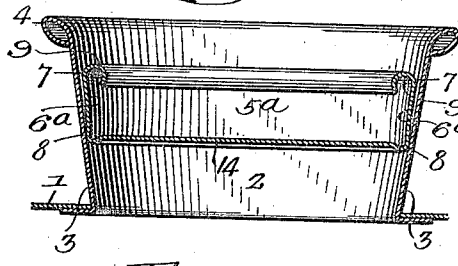


Fig. 3.

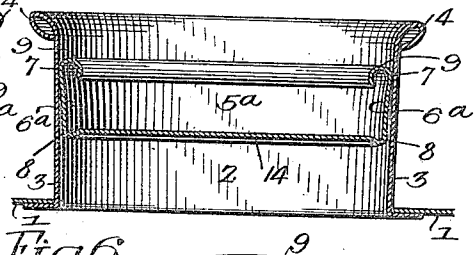


Fig. 4.

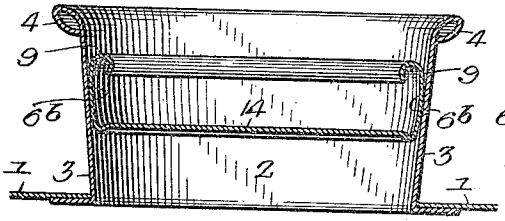


Fig. 6.

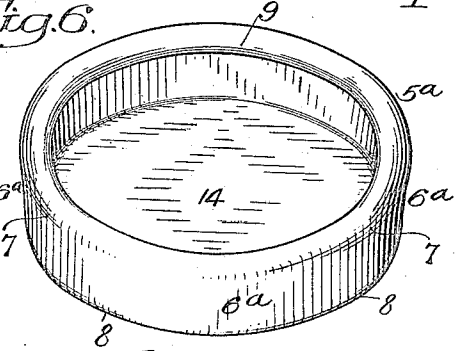


Fig. 5.

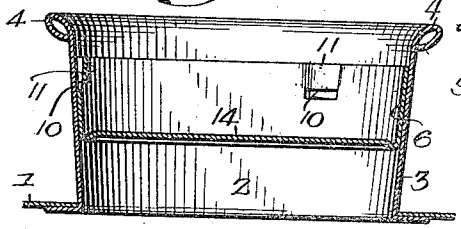


Fig. 7.

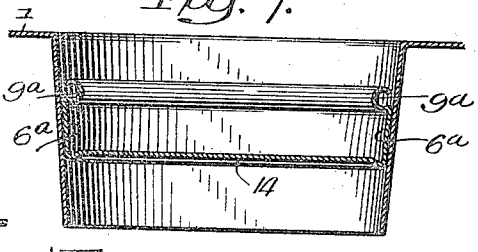
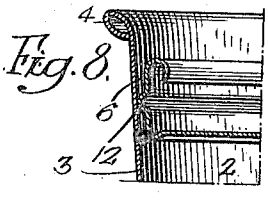


Fig. 8.



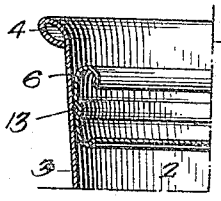


Fig. 9.

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UNITED STATES PATENT OFFICE.

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CLOSURE.

1,222,373. Specification of Letters Patent. Patented Apr. 10, 1917.

Application filed November 4, 1916. Serial No. 129,525.

To all whom it may concern:

Be it known that I, HARRY M. EPSTEIN, a citizen of the United States, and a resident of New York, N. Y., have invented certain Improvements in Closures, of which the following is a specification.

My invention relates to closures for the nozzles, spouts, or other openings of cans and similar receptacles, and comprises a substantially cup-shaped structure adapted to seat in and close a passage or opening in a can or other receptacle having tapered sides or walls. The opening or passage may be in a nozzle or spout projecting from the top or other portion of the can or receptacle, or if formed directly in the can it may extend inwardly therein. While designed and intended more particularly for use with cans, my improved closure is applicable for use with other structures requiring sealing, such for instance as bottles, jars, and the like.

The closure or stopper forming the subject of my invention is preferably made of metal, having bevel walls which may correspond substantially in taper with the walls of the passage or opening intended to be closed thereby, or have a different bevel or taper, and such structure is provided with an inwardly disposed portion or portions, preferably an annular bead or flange, providing means whereby it may be removed from its seat by the application of a suitable tool without injury to the sealing portion of the closure so that after removal it may be again seated in the opening or passage and securely seal the same. My improved closure structure is so made that some portion of its annular wall is adapted to engage the tapered wall of a nozzle or other opening or passage in a can, or the neck of a bottle, and be supported thereby in position convenient for removal when desired. When disposed in sealing position, the improved closure lies below the upper edge of the opening or passage in which it is seated.

The means for coöperation with a prying tool for effecting extraction or removal of the closure are formed in or on the tapered wall or flange of the same in such manner that the end of any suitable prying tool may be applied thereto, and with the side of the tool resting on the edge or wall of the opening in the can or other receptacle as a fulcrum, about diametrically opposite the part of the closure wall or flange upon which its end acts, said closure may be readily and easily pried out of the opening.

These and other features of my invention are more fully described hereinafter, reference being had to the accompanying drawings, in which:

Figure 1, is a sectional elevation of one form of stopper or closure made in accordance with my invention and shown as fitted to the nozzle of a can.

Figs. 2, 3, 4 and 5, are similar views illustrating modified forms of closures within the scope of my invention, all shown as fitted to can nozzles.

Fig. 6, is a perspective view of a closure typical of my invention.

Fig. 7, is a sectional view illustrating another form of closure fitted to the wall of an opening or passage extending into a can or receptacle, and

Figs. 8 and 9, are partial sectional views of closures illustrating other details of construction within the scope of my invention.

In Fig. 1 of the drawings, 1 represents the wall of an ordinary metal can of a type employed for varnish, oils and other materials of a like nature, having a nozzle 2, with outwardly flaring or tapered walls 3, which may terminate in a bead or flange 4, and fitted to said nozzle, with its upper edge below the top of the same, is a cup-shaped closure or sealing member 5, forming the subject of my invention. The annular wall 6 of this sealing closure may be tapered to correspond substantially with the taper of the wall 3 of the nozzle, so as to make close contact therewith at some portion of its annular surface when seated in place, as illustrated in Fig. 1, forming a complete seal or closure for the contents of the can; a condition that is augmented if the contents of the same congeal or coagulate at the point of contact of the closure with the wall of the nozzle.

The walls of can nozzles frequently differ in taper, hence it is desirable to provide a closure that will make the desired fit with the greatest number.

In Figs. 2 and 3, I have shown nozzles which differ materially in taper; that shown in Fig. 2 flaring considerably, while the

nozzle shown in Fig. 3 has almost perpendicular walls. These nozzles are shown as fitted with a closure 5^a substantially like that shown in Fig. 1, but having an annular wall 6^a slightly concaved on its outer surface and providing annular contacting portions or areas 7 and 8, at top and bottom, respectively, of said outer surface. With the form of nozzle shown in Fig. 2, the bottom contacting surface 8 of the closure is in sealing engagement with the inner surface of the nozzle wall, while with the form of nozzle shown in Fig. 3, the closure has its upper contacting surface 7 in sealing engagement with the wall of the nozzle. It will be readily seen, therefore, that such form of closure, which is also illustrated in the perspective view, Fig. 6, is admirably adapted for sealing nozzles having walls differing in taper within the usual limits incident to the construction or manufacture of such nozzles.

It will be understood, of course, that the nozzles employed may be of different sizes and that the nozzles of one size will differ slightly as to dimensions and taper. For each size, therefore, I propose to provide a closure which, in view of my improved construction, is adaptable to all commercial nozzles within such size range having tapered walls, no matter what such taper may be.

In the form of closure shown in Fig. 4, the outer surface of the annular wall 6^b is convex, as clearly indicated in the drawing. Its engagement with the inner surface of the nozzle will be at some annular portion of the convex wall, depending upon the taper of the nozzle wall.

The several forms of the closure described above and made in accordance with my invention are provided with means interiorly of the same whereby they may be removed from their seats by the application of a suitable tool. It is important that the closure be uninjured in the act of removing the same, since it is designed to be used repeatedly in connection with the same structure, and if the taper of its wall is affected or destroyed, it could not perform its function of serving as a closure.

In its simplest form, the coöperating removing means comprises a beaded edge, as illustrated at 9, which is formed during the stamping or pressing up of the closure; such beaded edge being also of service in strengthening the closure and preventing deformation of the annular wall of the same. Preferably, the beaded edge is not flattened against the outer wall of the closure, but stands out from such wall in a position to strengthen the same and form at the same time an engaging wall for a tool when employed to remove the closure from its seat without injury to its wall or the wall of the opening or passage receiving the same.

In the form of closure shown in Fig. 5, the annular wall 6 of the same may substantially fit the tapered wall of the nozzle, and in this form of the closure, its annular wall is provided with slots 10, formed a suitable distance from the bottom of the annular wall to insure proper sealing action of the closure when it is seated in an opening or nozzle of a can or other receptacle. The wall above the slots 10, is bent inwardly, as shown at 11, to form projections for engagement by a prying tool when it is desired to remove the closure from a can or other receptacle.

In the form of closure shown in Fig. 7, the annular wall 6^a is slightly concaved externally, as illustrated in the form of closure shown in Figs. 2, 3 and 7, but the bead or roll 9^a of the upper edge of the closure differs slightly therefrom; terminating outwardly instead of inwardly.

The form of closure shown in Fig. 8, has an outstanding annular rib 12, struck up from the annular wall 6; such rib forming sealing engagement with the wall of the nozzle or other opening of the can or receptacle.

The form of closure shown in Fig. 9, has an annular groove 13, whereby annular contacting surfaces are formed above and below the same; such groove serving also to receive a washer or gasket if desired. Otherwise, the closures shown in Figs. 8 and 9, are substantially of the same character as those shown in Figs. 1, 2, 3 and 4.

In all forms of the closure, I prefer to provide a bottom 14 therefor that is raised substantially throughout its entire area, as illustrated; such construction serving to strengthen the annular wall at its junction with the bottom and also providing a rounded annular edge at such point.

When employed as a closure for the nozzles of varnish cans, oil cans, and the like, the closure may be made of tinned or other metal of substantially the same weight as that comprising the wall or nozzle of the can. When employed as a bottle stopper, metal of this character may be used, or a softer and more ductile metal may be employed, since the neck of the bottle may not present as smooth a taper and unbroken surface as the mouth of the can nozzle. In other instances, stoppers of other materials may be employed, depending upon the use to which they are to be put. In all instances, they will be provided with an annular wall to engage a tapered nozzle or opening and with a portion to afford means for the application of a prying tool to remove them from their seat.

While I have described my improved closure with especial reference to its employment with the nozzles or openings of cans and other receptacles, it will be understood

that it may be employed for sealing bottles or jars and other structures having mouths or pouring apertures with tapered walls.

I claim:

1. In combination with a nozzle or passage having a tapered wall, a closure having an upwardly extending and tapered flange adapted to seat in the tapered opening of said nozzle or passage and be wholly within the plane of the outer edge thereof, said flange having inwardly extending means integral therewith for coöperative engagement with a prying tool.

2. In combination with a nozzle or passage having a tapered wall, a closure for said nozzle having an annular wall adapted to seat within said nozzle, said closure being provided with inwardly projecting means forming an engaging portion for a prying tool designed to lift the closure from its seat.

3. In combination with a nozzle or passage having a tapered wall, a closure for said nozzle having a tapered annular wall corresponding substantially therewith and adapted to seat within said nozzle, and a flange carried by said closure and forming an engaging portion for a prying tool designed to lift the closure from its seat.

4. In combination with the nozzle of a can having a tapered wall, a closure for said nozzle comprising a cup-like member having an annular wall shaped to provide annular engaging portions for contact with the nozzle, and an integral annular flange to strengthen the wall of the closure and form an engaging portion for a prying tool designed to lift the closure from its seat.

5. In combination with the nozzle of a can having a tapered wall, a closure for said nozzle comprising a cup-like member having an annular wall shaped to provide annular engaging portions for contact with the nozzle, and an inwardly projecting annular flange to strengthen the wall of the closure and form an engaging portion for a prying tool designed to lift the closure from its seat.

6. In combination with a receptacle having a nozzle with a tapered wall, a closure having an upwardly extending and tapered flange or wall adapted to seat in the nozzle of the receptacle, said flange having a portion of its wall displaced outwardly to form an annular portion for engagement with the wall of the nozzle, and having an integral bead for strengthening the upper portion of the wall.

7. In combination with a nozzle or passage having a tapered wall, a closure comprising a cup-shaped member having an upwardly extending wall or flange adapted to seat in the tapered wall opening of said nozzle or passage and be wholly within the plane of the outer edge thereof, said wall having external annular engaging portions, and an internal bead or strengthening flange terminating out of contact with the annular wall.

8. The combination with a can having an opening with a tapered wall, of a sheet metal closure for said opening, said closure comprising a cupped member with an annular wall for contact with the wall of the opening whereby a tight fit with the latter may be made, said closure having an inturned annular flange integral therewith, and a bottom disposed in a plane above the lowermost portion of its annular wall.

9. The combination with a can nozzle having a tapered wall, of a sheet metal closure for said opening, said closure comprising a cupped member with an annular wall shaped to contact at some portion with the wall of the nozzle whereby a tight fit with the latter may be made, said closure having an inturned annular flange integral with its annular wall and having the surface of its annular wall concaved to provide contacting edges at top and bottom of the closure for engagement with nozzles of variable taper.

HARRY M. EPSTEIN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."