Aug. 27, 1957 LING H. LEE 2,804,225

CLOSURE FOR RECEPTACLE

Filed May 26, 1953

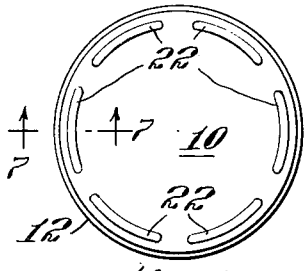

Fig. 1

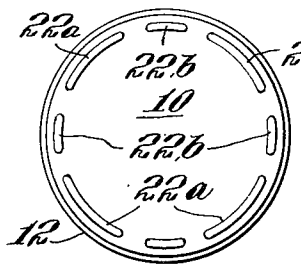

Fig. 3

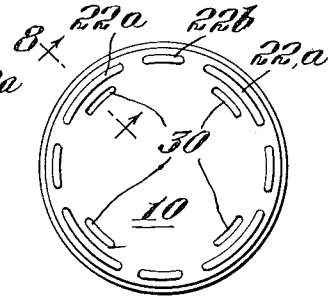

Fig. 5

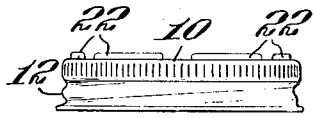

Fig. 2

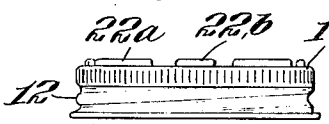

Fig. 4

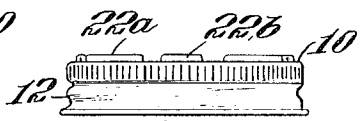

Fig. 6

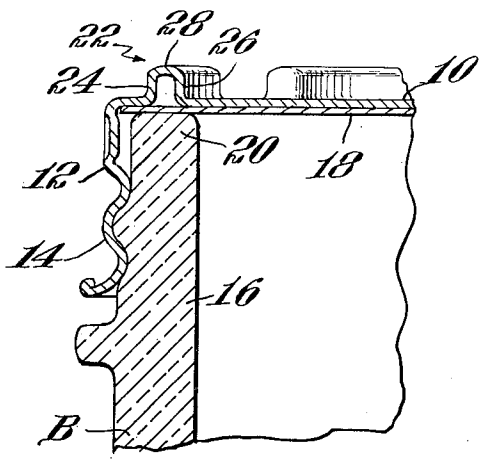

Fig. 7

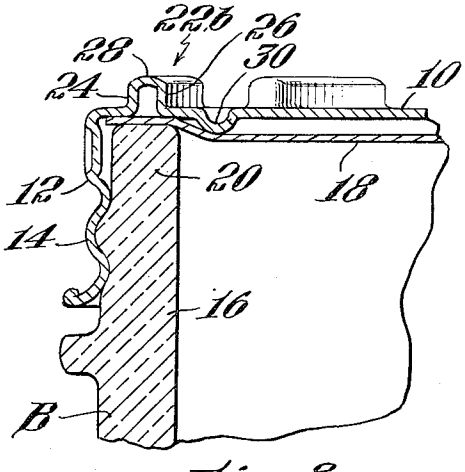

Fig. 8

Inventor
Ling Hem Lee
by Davis, Hoxie & Faithfull
Att'ys.

United States Patent Office 2,804,225 Patented Aug. 27, 1957

2,804,225

CLOSURE FOR RECEPTACLE

Ling H. Lee, New York, N. Y.

Application May 26, 1953, Serial No. 357,421

1 Claim. (Cl. 215—43)

This invention relates to closures for receptacles such as bottles, and more particularly to closures which tightly or hermetically seal the associated receptacles.

As is well known by everyone who has attempted to remove a screw type closure from a bottle or similar receptacle, such operation is usually impossible to accomplish without the use of a wrench, special bottle opener or the pounding of the cap with a knife handle or other blunt instrument so that the closure is deformed sufficiently to break the seal, any of which procedures requires the use of special tools and is accompanied by the danger of breaking the bottle and the destruction of its contents and the possibility of physical harm from glass cuts.

It is accordingly the objects of this invention to provide a closure for a receptacle which will seal tightly, which can readily be removed, which forms an effective seal when replaced, which will not distort when the receptacles are stacked one upon top of another, which is simple and economical to manufacture, which is attractive in appearance, which is adapted to mass production techniques, and which advances the art generally.

A closure according to the invention comprises a cover in the form of a disc having a flange which is threaded or otherwise secured to an annular portion of a receptacle to compress a gasket between the lip of the annular portion and the inner surface of the cover. The cover is provided with one, or preferably more, arcuate embossments which projects outwardly in the opposite direction than the flange immediately above the lip of the annular portion of the receptacle. The spacing between the embossment side walls determined radially of the cover is made less than the thickness of the lip so that the lip extends beyond the embossment on either side and does not interfere with the sealing action of the gasket. The embossment is preferably crowned and the side walls parallel so as better to withstand static loading such as is imposed by the stacking of the receptacles one on top of the other. The closure is loosened by the application of light oblique blows upon the crown of the embossments by a blunt instrument causing a momentary distortion of the closure which breaks the seal.

These and other objects and aspects of the invention will be apparent from the following description of several specific embodiments thereof which refers to a drawing wherein:

Figs. 1 and 2 are plan and side views, respectively, of a first embodiment;

Figs. 3 and 4 are similar views of a second embodiment;

Figs. 5 and 6 are similar views of a third embodiment;

Fig. 7 is an enlarged fragmentary sectional view on line 7—7 of Fig. 1; and

Fig. 8 is an enlarged fragmentary sectional view on line 8—8 of Fig. 5.

The first embodiment of the invention chosen for the

purpose of illustration comprises, as shown in Figs. 1 and 2, a cover **10** which is in the form of a disc having an integral flange **12** depending from the periphery. Although I prefer to form the integral cover and flange from sheet metal, it is also possible to mold the covers from other material, such as a suitable plastic which is elastic enough to deform under a blow for reasons which will appear hereinafter. The flange **12** is provided with a threaded portion **14** which engages corresponding threads upon the outer periphery of the annular portion **16** of a receptacle such as the bottle B, only a portion of which is shown in Fig. 7 as the bottle forms no part of the present invention and may be of any of the usual designs. Although a closure of the screw type has been used for the purposes of illustration, it is to be understood that my invention is not limited thereto but is applicable to other closures employing other means, such as friction, for maintaining a sealing pressure upon a gasket **18** which is interposed between the inner surface of the cover **10** and the rim or lip **20** forming the end of the annular portion **16** of the receptacle.

Closures of the type described above are widely used and have many desirable features, but are inherently very difficult to loosen after having been tightened sufficiently to form a hermetical seal. To overcome this considerable disadvantage, in my improved closure I provide one or more raised arcuate embossments **22** in the cover **10** which project outwardly in the opposite direction to the flange **12**. The number of embossments can be varied within the scope of my invention but is preferably proportioned to the size of the cover, it being possible on a small diameter cover to use as small a number as one embossment which is then in the form of a complete annulus or ring. However, I have found it generally better to use a plurality of equally spaced embossments **22** arranged so that the distance between the arcuate ends of adjacent embossments is not greater than half the length thereof.

Receptacles upon which the above described closures are used are often stacked one on top of the other in considerable numbers so that a large force is brought to bear upon the covers of the lowermost bottles by the resulting static loading. To increase the rigidity and minimize the possibility of the deformation of the embossments and destruction of the sealing action as a result of stacking or other static loading, the tops of the respective embossments are crowned as at **28** and the side walls **24** and **26** of the respective embossments are preferably made parallel and arranged substantially normally to the plane of the remainder of the cover **10**.

The embossment side walls **24** and **26** are located radially from the center of the cover **10** so that the spacing between the side walls is less than the thickness of the annular portion **16** of the bottle B, and the embossments **22** are positioned when the closure is screwed upon the annular portion **16** so that the lip **20** of the bottle B extends on either side beyond the respective side walls **24** and **26**. With such an arrangement the lower ends of the side walls each pinch the gasket against the lip to provide a double seal so as not to interfere with the ef-,caciousness of the gasket.

The closure is loosened by gently striking oblique blows upon one or more of the embossments **22** by means of a blunt instrument such as a knife handle or can opener. Such blows cause the side walls **24** and **26** of the embossments **22** to spread, momentarily deforming the cover so that the seal is broken and the closure can be manually loosened without the need of special tools.

In Figs. 3 and 4 is illustrated a second embodiment of my invention which is especially adapted to closures having a large diameter. In this embodiment the emboss-

ments **22***a* and **22***b* are similar to the embossments **22** described heretofore with the exception that alternate embossments **22***b* are less than half the length of embossments **22***a*. The third embodiment shown in Figs. 5, 6 and 8 is similar to the second embodiment of Figs. 3 and 4 with the addition of indentations **30**, one of which is located radially of the cover with respect to each of the long embossments **22***a*. These indentations serve to space the gasket **18** from the cover **10**.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claim.

I claim:

A closure for a receptacle such as a bottle comprising a cover in the form of a disc having a substantially cylindrical threaded flange depending from the periphery thereof engaging a corresponding annular portion of the receptacle to bring the inner surface of the cover against the lip of the annular portion by rotation, and a gasket interposed between the inner surface of the disc and the lip to act as a seal, said cover having an arcuate embossment located immediately above said lip, the distance radially of the cover between the embossment side walls being less than the thickness of the lip, the lip extending beyond the embossment on either side thereof throughout the length of the embossment so that the embossment does not interfere with the efficaciousness of the gasket whereby a slight blow upon the embossment causes a momentary distortion of the closure to break the seal so that the closure can be readily removed.

References Cited in the file of this patent

UNITED STATES PATENTS

791,061	West	May 30, 1905
848,785	Towle	Apr. 2, 1907
1,095,470	Schloss	May 4, 1914
1,124,450	Ipsen	Jan. 12, 1915
1,463,145	Koss	July 24, 1923
1,554,749	Merolle	Sept. 22, 1925
1,588,652	Brown	June 15, 1926
1,608,908	Norwood	Nov. 30, 1926
1,942,810	Gibbs	Jan. 9, 1934