Aug. 19, 1941. E. H. FABRICE 2,253,023

RECEPTACLE AND CLOSURE THEREFOR

Filed Dec. 14, 1938

Fig. 1.

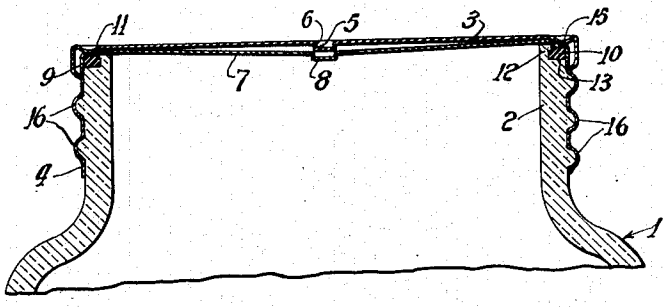


Fig. 2.

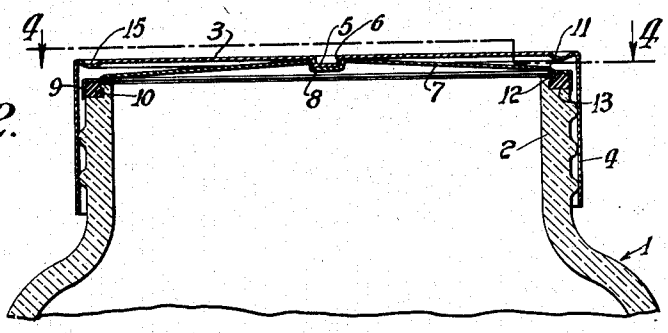


Fig. 4.

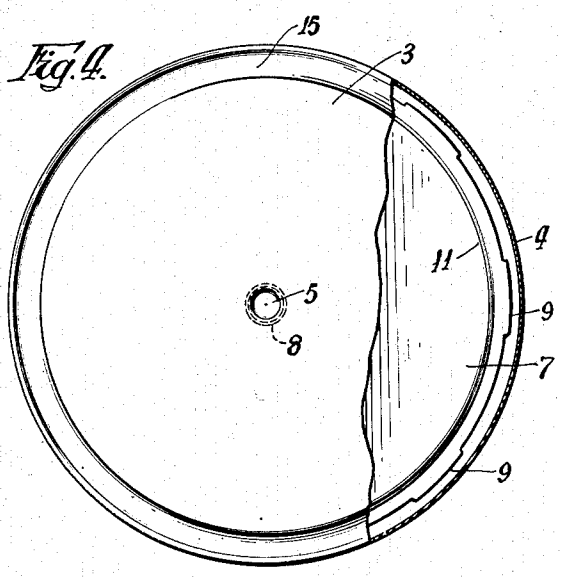


Fig. 3

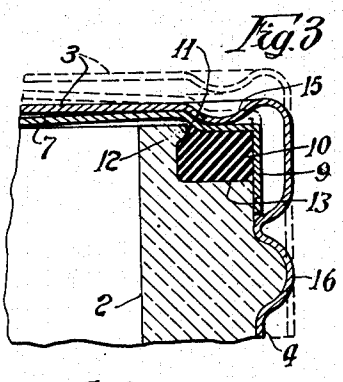


Fig. 6.

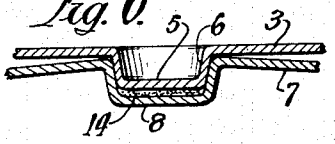
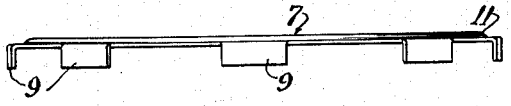


Fig. 5.



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2,253,023

RECEPTACLE AND CLOSURE THEREFOR

Edward H. Fabrice, Chicago, Ill.

Application December 14, 1938, Serial No. 245,555

1 Claim. (Cl. 215—43)

The present invention has for its object to provide a receptacle, such as a jar, glass, or the like, and a sheet metal closure for the same particularly adapted for vacuum packaging of food products, wherein the closure cap is composed of two separable units which are initially coupled with each other and become separated from each other automatically after the jar and its contents with the closure cap mounted thereon are removed from the vacuum pan or device.

A further object of the invention is to provide a structure of the type specified wherein the production of vacuum within the receptacle automatically effects sealing of the latter against intrusion of air and also automatically effects the separation of the two members of the closure cap from each other.

Other objects and advantages of the invention are pointed out in the following specification.

A suitable embodiment of the invention is illustrated in the accompanying drawing, where—

Fig. 1 is a fragmentary central longitudinal section of a receptacle sealed by means of a closure cap constructed in accordance with the invention.

Fig. 2 is a view similar to Fig. 1 showing the cap disposed in its initial position upon the receptacle.

Fig. 3 is a fragmentary detail sectional view on an enlarged scale, similar to the right side portion of Fig. 2, showing the position of the closure cap upon the receptacle after the latter is removed from the vacuum pan or the like, and the threads have been formed in the cap.

Fig. 4 is a fragmentary plan view, partly in section, of the closure cap taken on the line 4—4 of Fig. 2.

Fig. 5 is a detail side elevation of the inner member of the closure cap.

Fig. 6 is an illustration of a modification of the structure illustrated in Figs. 1–5.

The device of the present invention comprises a jar 1, equipped with an externally threaded neck portion 2, and a closure cap comprising a cover member 3, equipped with an annular cylindrical flange 4 having an inner diameter substantially equal to the greatest diameter of the threads of the neck 2 of the receptacle.

The said cover member or cap 3 is equipped with a central slightly tapered boss 5 which presents a downwardly projecting circular formation having a slightly tapered peripheral wall 6. Disposed within the cap 3 is a circular disk 7 equipped with a central depression 8 which is adapted to snugly receive the formation or boss 5 of the cap 3, so that the said cap 3 will be normally frictionally coupled with disk 7 when shipping the caps 3 from the factory to the food-stuffs preserving plant where same will be mounted upon the jars.

The disk 7 is equipped with a number of downwardly extending flanges or projections 9 along the periphery thereof which are adapted to retain the gasket 10 of rubber or other suitable material in place along the marginal portion of said disk 7, as shown particularly in Fig. 2, said gasket being of slightly larger outer diameter than the said disk 7 and will thus be held frictionally in place on the said disk 7 by the said flanges 9. The marginal portion of the disk 7 is offset downwardly from the body portion along the annular bead 11.

The rim of the mouth of the jar 1 is equipped with the upstanding annular flange 12 which borders the inner edge of the annular shoulder upon which the gasket 10 is supported, said flange 12 being of larger outer diameter at its upper than at its lower end. The outer diameter of said upper end of said flange 12 is slightly greater than the inner diameter of the gasket 10 so that the latter will be held firmly in place upon the said shoulder 13.

The said caps 3 are, as aforesaid, adapted to be shipped from the factory with the disk 7 attached thereto, the latter being equipped with the washers 10.

At the preserving plant, the jars 1 are filled with the product and the said cap 3 with the disk 7 and washer or gasket 10 then disposed in the position shown in Fig. 2. The product disposed within the jars is usually at a temperature substantially that of the boiling point of water and thus the jars become filled with vapour above the level of the product at the instant that the cap 3 and disk 7 are disposed upon the jar as in Fig. 2.

The jar with the cap disposed thereon is then fed into the vacuum pan, or the like, for causing fluid which is above the level of the product to be withdrawn from the jar, this being readily accomplished by leakage between the upper face of the gasket and the opposed surface of the disk 7, due to the loose mounting of the cap and disk upon the receptacle.

At the instant that the vacuum is relieved,

atmospheric pressure will cause disk 7 to be moved downwardly, thereby causing the gasket or washer 10 to be compressed to produce a fluid-tight joint between the disk 7 and the jar 1. As the atmospheric pressure extends over substantially the entire surface of the disk 7, which is of appreciably large area, it will cause said disk 7 to buckle downwardly and to be thereby released from its frictional hold upon the cap 3, so that said disk will become disposed in the position substantially as shown in Fig. 1, and as also shown in full lines in Fig. 3.

The sealed jar with the cap 3 placed thereon is then fed to a machine wherein said cap 3 is forced down to the position shown in Fig. 1 to exert a pressure upon the marginal portion of the disk 7. The threads 16 are then formed in the flange 4 of the cap 3 in any well known manner to cause said cap to be retained firmly upon the jar with the said gasket 10 compressed.

When the filled jar 1 reaches the consumer, the cap 3 is very easily removed and thereafter a knife blade is inserted between the upper surface of the washer or gasket 10 and the lower face of the marginal portion of the disk 7 between flanges or projections 9 of said disk 7 and the latter is thus removed and discarded, the washer 10 remaining disposed upon the rim of the mouth of the jar, due to the shape of the outer surface of the said flange 13, and thereafter cooperates with the marginal portion 15 of the cap 3 to reseal the receptacle, said portion 15 projecting below the body portion of the crown of said cap.

In Fig. 6 a modified form of construction is shown wherein the frictional connection between the depression or boss 5 of the cap 3 and the corresponding formation 8 of the disk 7 is made very light and a hollow space 14 is provided between the bottom walls of said boss 5 and formation 8 into which a drop of guttapercha or other adhesive is disposed to cement the disk 7 to the cover 3, the nature of the cement necessarily being such that under the influence of heat to which the disk 7 and cap 3 are subjected following mounting thereof upon the receptacle, said adhesive or cement will be caused to soften or to melt and thus release the disk 7 from the cap 3.

It will be noted that the said disk 7 is initially dished so that its central portion is higher than its marginal portion. The said disk is composed of thin resilient sheet metal which, under the influence of atmospheric pressure upon its upper surface, will buckle or distort to cause all of the portion thereof bordered by the annular bead 11 to become flat or dished below the plane of its marginal portion resting upon the said gasket 10 and thus withdraw the central formation 8 thereof from engagement with the base of the crown of the cap 3.

The said disk 7 acts in part as a means for mounting the gasket upon the rim of the receptacle mouth to which it remains transferred after discarding said disk.

Where a frictional connection between said disk and the said cap is relied upon, as in Figs. 2 and 3, the hold may be quite firm, because under the influence of heat, the boss or formation 8 of the disk will be expanded before the latter penetrates to heat the boss or formation 5 of the cap 3.

In instances where the receptacle and cap are used for the vacuum packing of coffee or normally cold products, the structure of Fig. 6 is preferred, because the guttapercha or other cementitious bond may be heated as by the point of a hot soldering iron inserted into the boss 5 after the cap 3 is loosely disposed upon the receptacle to effect detachment of the disk from the cap 3.

While the accompanying drawing illustrates a suitable embodiment of the invention, it will be appreciated that variations in specific details of construction may be effected without departing from the invention as defined in the appended claim.

I claim as my invention:

A closure for jars and the like comprising an annularly flanged closure cap wherein the flange is equipped with means engageable with means on the jar to secure the cap in place on the jar, a resilient dished sheet-metal disk disposed within the cap, the crown of the latter and said disk being equipped with centrally disposed substantially telescopically interengaged male and female formations frictionally maintaining said disk detachably connected with said cap, the marginal portion of said disk adapted to cooperate with the rim of the mouth of the jar as said cap is mounted upon said jar and flexed as said cap is disposed at the lower limit of its movement upon the jar to cause said marginal portion of said disk to be pressed upon said rim, the frictional connection between said cap and said disk being adapted to be broken by further flexing of said disk responsively to vacuum within said jar, thereby to permit the cap to be removed without disturbing said disk.

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