Nov. 17, 1959 R. A. CONRAD 2,913,135

CLOSURE UNIT FOR BOTTLES AND JARS

Filed May 28, 1957

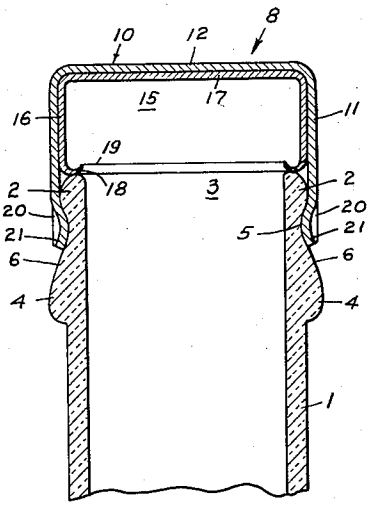


Fig. 1.

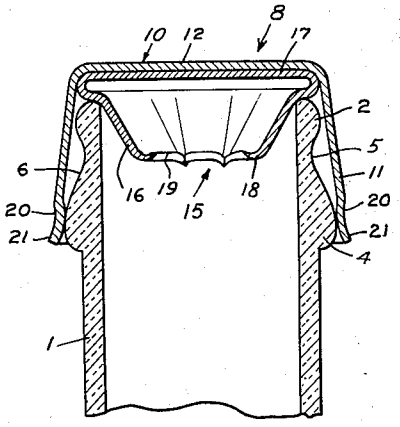


Fig. 4.

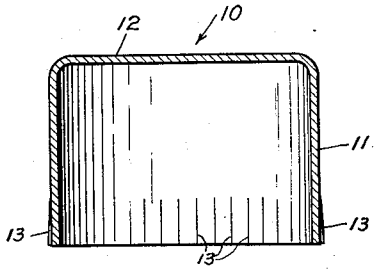


Fig. 2.

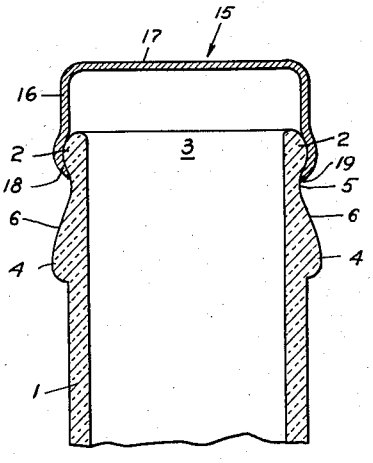


Fig. 5.

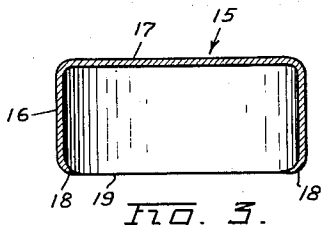


Fig. 3.

INVENTOR.
RENÉ ARTHUR CONRAD
BY Alexander Riaboff
ATTORNEY

United States Patent Office 2,913,135 Patented Nov. 17, 1959

2,913,135

CLOSURE UNIT FOR BOTTLES AND JARS

René Arthur Conrad, Richmond, Calif.

Application May 28, 1957, Serial No. 662,057

7 Claims. (Cl. 215—46)

This invention relates to a closure unit for bottles and jars.

The primary object of this invention is to provide a closure unit for bottles and jars which may be easily and simply removed from said bottle or jar without any tool.

Another object of this invention is to provide a closure unit as above described which can be removed off a bottle or a jar by forcing said closure unit downwardly on said bottle or jar by tapping the same or by applying pressure thereon.

Another object of this invention is to provide a closure unit for bottles or jars which consists of a cap and a hollow washer therein which washer may be used for closing said bottle or jar after the cap is removed.

Other objects and advantages will appear as the specification proceeds and the novel features of the device will be particularly pointed out in the claims hereto annexed.

In this specification and the annexed drawing, the invention is illustrated in the form considered to be the best but it is understood, that the invention is not limited to such form; and it is also to be understood that in and by the claims following the description, it is desired to cover the invention in whatsoever form it may be embodied.

This invention is illustrated in a drawing forming a part of the specification in which:

Fig. 1 is a central vertical cross-section through a bottle top sealed with the closure unit forming the subject matter of this invention.

Fig. 2 is a central vertical cross-section through the cap before the same is applied on a bottle or the like.

Fig. 3 is a central vertical cross-section through the hollow washer.

Fig. 4 is a central vertical cross-section through the top of a bottle with the closure unit pushed down and ready to be taken off, and

Fig. 5 shows a bottle top sealed with the hollow washer.

My invention is used in connection with a bottle or a jar having a neck 1 which is formed with a rounded bead 2 at its mouth 3 and a shoulder 4 below said bead, said shoulder having a frustro-conical surface 6 narrowing upwardly. The surface 6 is separated from the bead 2 by a circular concave depression 5. The outer circumference of the bead 2 is of a smaller diameter than that of the outer circumference of the shoulder 4. The above described arrangement of the parts is standard for bottles and jars using crimped caps for its closure.

The closure unit 8 comprising the subject matter of this invention consists of a cap 10, preferably made of metal, having a cylindrical wall 11 and a round top 12 closing the same. The inner diameter of the cylindrical wall 11 is slightly larger than the outer diameter of the bead 2 so that the latter may freely enter the same. The edge of the wall 11 has preformed crimps 13 to facilitate crimping operation on the bottle.

The cap 10 contains a hollow cylindrical washer 15 preferably made of some resilient plastic which is impervious to the contents of the bottle or jar. The washer

15 consists of a cylindrical body 16 closed by the top 17, and snugly fits into said cap 10. The lower end of the body 16 is curved inwardly as shown at 18 and tapered to a line 19. The body 16 extends downwardly substantially one half of the height of the wall 11.

The closure unit 8 is placed on the top of the bottle, the curved end 18 resting on the top thereof. Thereupon the closure unit 8 is pressed downwardly slightly bringing the lower end of the wall 11 somewhat below the middle of the depression 5, and forcing said end 18 against the top of the bottle whereby said end 18 is curved upwardly. Then the lower edge of the cap wall 11 is crimped, as shown at 20, in a manner well known in the art, to secure the closure unit 8 permanently to the bottle or jar. The pressure of gas inside of the bottle which in case of carbonated drinks equals to about 40 pounds per square inch pushes the washer 15 against the cap 10 and against the top of the bottle and thus effectively seals the latter.

It shall be noted that due to the concave curvature of the depression 5 on the bottle, and the lower edge of the cylindrical wall 11 being below the middle of said depression, the lower edge of the crimps 20 is directed outwardly and parallel to the conical surface 6, as shown at 21.

In order to take the closure unit 8 off the bottle, the unit 8 is forced to move downwardly on the bottle by applying pressure thereon, or by tapping the same. The downward movement of the cap 10 in respect to the bottle, forces the crimps 20 to ride on the conical surface 6. The lower edge 21 of said crimps, being directed outwardly, assists considerably in spreading out the crimps 20. The cap 10 moves downwardly until it is stopped by the washer, being compressed between the cap top 12 and the top of the bottle. At this time the crimps 20 rest against the shoulder 4, as shown in Fig. 4. As the shoulder 4 is of a greater diameter than that of the bead 2, the lower end of the cap 10 is enlarged to such extent that it may be easily taken off the bottle.

When the closure unit 8 is forced downwardly on the bottle in order to take it off, the washer 15 is compressed between the cap top 12 and the bottle top and a part of said washer is forced to protrude into the neck of the bottle, as shown in Fig. 4. The gas inside of the bottle, being under considerable pressure, helps to remove the cap 10 and the washer 15 off the bottle and in many cases will be sufficient to push off the cap 10 and the washer 15 without any assistance.

The washer 15 may be used to close the bottle as shown in Fig. 5.

The material for the cap 10, preferably steel, should be of such thickness and ductility as to be readily crimped and to permit said crimps to straighten out when forced on said shoulder 4.

The washer 15 should be made of plastic or rubber material of such quality as to be able to preserve its form and to be sufficiently pliable to seal said bottle when inside the cap 10 and to be resilient enough to be placed on the top of the bottle.

I claim:

1. The combination with a bottle having a rounded bead at the mouth thereof, and a shoulder of a greater outside diameter than that of said bead, and located below said bead and separated therefrom by a depression; of a closure unit consisting of a cap having a top and a cylindrical wall of such inside diameter to permit said bead to pass inside of said wall, and a hollow washer inside of said cap having a top and a cylindrical body, the outer end of said body being curved inwardly, said washer body being of such length as to contact the top of said bottle when the cap is on said bottle with the cylindrical wall edge below the middle of said depression to be crimped thereon to seal the bottle.

2. A bottle closure unit comprising a cap having a cylindrical wall, closed at its upper end by a top, and a hollow washer inside of said cap, said washer consisting of a cylindrical body and closed at its top and having the lower edge of said washer body curved inwardly, and being of the length substantially equal to the half of the length of the cap wall.

3. The combination with a bottle having a rounded bead at the mouth thereof, and a shoulder of a greater outside diameter than that of said bead and located below said bead and separated therefrom by a depression; of a closure unit consisting of a cap having a top and a cylindrical wall of such inside diameter as to permit said bead to pass inside of said wall, and a hollow washer inside of said cap having a top and a cylindrical body, the outer end of said body being curved inwardly, said closure unit being adapted to be placed on the top of the bottle so that the lower end of the cap is below the middle of the depression for crimping thereon, and said washer closing the top of the bottle.

4. A closing unit for a bottle having a bead at the top of the bottle and a shoulder below said bead, said bead being of a smaller outside diameter than that of the shoulder, said bead and a shoulder being separated by a concave depression, said unit comprising a cylindrical cap closed at the top, a hollow resilient washer fitted inside of said cap, said washer having a cylindrical body closed at the top, said body extending substantially to the middle of said cap and having its edge turned inwardly; said cap being of such inside diameter as to accommodate the bead therein.

5. The combination with a container having a bead at the top thereof and a shoulder below said bead in close vicinity thereto, and being separated from said bead by a depression; of a closure unit for said container comprising a cylindrical cap having a closed top and an open bottom, a hollow washer fitted inside of said cap having a cylindrical body closed at the top and having the lower edge of said body turned inwardly, said cap being of the

inside diameter sufficient to pass the bead thereinto and of sufficient length to permit the edge of said cap to pass beyond the greatest diameter on said shoulder, when said closing unit is pressed to its limit upon said bottle for taking off the same.

6. The combination with a container having a bead at the top thereof and a shoulder below said bead and separated therefrom by a depression; of a closure unit for said container comprising a cylindrical cap having a closed top and an open bottom, a hollow washer fitted inside of said cap and having a cylindrical body closed at the top and having its lower rim turned inwardly, said cap being of sufficient diameter to permit the bead to enter said cap, said cap being of such length that its lower rim is opposite the depression when said cap rests on the washer while the latter rests on the top of the container.

7. The combination with a container having a bead at the top thereof and a shoulder below said bead and separated therefrom by a depression; of a closure unit for said container comprising a cylindrical cap having a closed top and an open bottom, a hollow washer fitted inside of said cap and having a cylindrical body closed at the top and having its lower rim turned inwardly, and being of the length substantially equal to a half of the length of the cap wall, said cap being of sufficient diameter to permit the bead to enter said cap, said cap being of such length that its lower rim is opposite the depression when said cap rests on the washer while the latter rests on the top of the container.

References Cited in the file of this patent

UNITED STATES PATENTS

1,391,538	Foell	Sept. 20, 1921
2,616,593	Leibeuhaut	Nov. 4, 1952
2,820,563	Bronniman	Jan. 21, 1958

FOREIGN PATENTS

460,725	Italy	Dec. 13, 1950
788,148	Great Britain	Aug. 3, 1956