June 13, 1939. J. R. HOGE 2,162,455

BOTTLE CLOSURE

Filed June 14, 1937

Fig. 1.

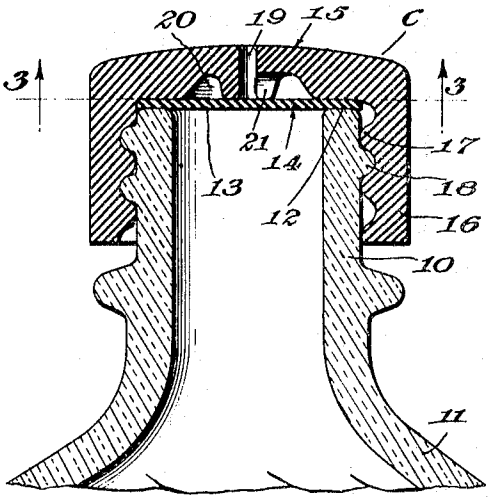


Fig. 2.

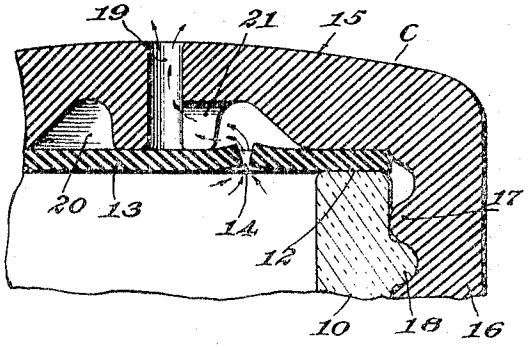


Fig. 4.

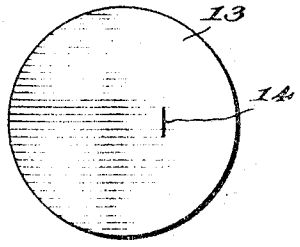


Fig. 3.

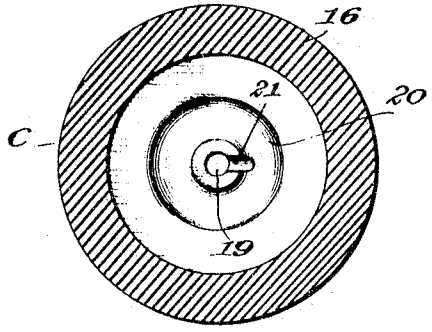


Fig. 5.

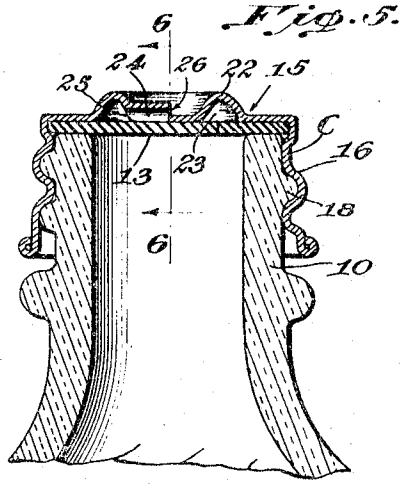
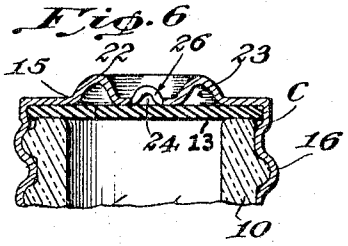


Fig. 6



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UNITED STATES PATENT OFFICE

2,162,455

BOTTLE CLOSURE

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Application June 14, 1937, Serial No. 148,021

2 Claims. (Cl. 215—56)

The present invention relates to improvements in bottle closures and more particularly to that type embodying means permitting the escape of gas which is formed by certain bottled liquids and which very frequently build up sufficient pressure to break the container or closure.

An object of the invention is the provision of a novel closure and diaphragm, the latter functioning as a sealing gasket which will effectively prevent the admission of air, but will permit the escape of gas or the like in the reduction of internal pressures.

A further object of the invention is the provision of a venting feature which may be embodied in both molded and sheet metal closures with equal facility.

Other objects will be in part apparent and in part pointed out hereinafter.

In the drawing:

Fig. 1 is a fragmentary sectional view showing my invention embodied in a molded closure;

Fig. 2 is a detail sectional view of the closure;

Fig. 3 is a sectional view taken substantially along the line 3—3 of Fig. 1;

Fig. 4 is a plan view of the diaphragm or sealing disk;

Fig. 5 is a fragmentary sectional view illustrating the embodiment of my invention in a sheet metal closure; and

Fig. 6 is a detail sectional view taken substantially along the line 6—6 of Fig. 5.

In Figs. 1 to 4, both inclusive, illustrating one form of the present invention, the closure C is threaded upon the reduced neck 10 of a bottle 11, said neck terminating in an annular sealing surface 12 with which a diaphragm 13, or sealing gasket formed of rubber or rubber composition, is held firmly engaged by said closure. A slit 14 constituting a vent opening is provided in the diaphragm at a point substantially midway between its periphery and center.

The closure C includes a circular top 15 or button and a depending skirt 16 or attaching flange which is formed with internal screw threads 17, the latter adapted for engagement with external threads 18 on the neck 10.

A centrally disposed vent opening 19 is formed in the top 15 or button, the lower or inner end of said opening being closed by contact with the diaphragm 13 or sealing disk. A channel 20 or groove is formed in the lower or inner face of the top 15 concentrically with respect to the vent opening 19 and has communication with the latter by way of a radial groove 21 or passageway.

With such a structure as that just described, it is apparent that irrespective of the position of the diaphragm immediately following normal application of the closure C, the slit 14 or vent in the diaphragm will be in register with the annular channel 20 at one point or another, with the result that venting of excess gas pressure is always possible. It is obvious that the slit is normally closed but will open momentarily under excess internal pressure.

In Figs. 5 and 6 there is illustrated another form of the present invention, differing from that shown in Figs. 1 to 4 only to the extent necessary to embodying the invention in a sheet metal closure.

The closure C is threaded upon the bottle neck 10 and includes the circular top 15 or button and a depending attaching flange 16 or skirt which is threaded upon the bottle neck. The diaphragm 13, or sealing disk, is of the same construction as that described above.

The circular top 15 of the closure is provided with an upstanding hollow annular bead 22 which creates an annular channel 23 or groove in the lower side of and concentric with said top. A radial passageway 24, or groove, opens at one end 25 into the annular channel 23 and at its other end in a port 26 through which it communicates with the outside air substantially at the center or axis of the closure. It will be observed that the upper wall of the radial passageway 24 is somewhat below the plane of the top surface of the bead 22 with the result that the latter affords a certain degree of protection against the possibility of collapsing the wall of the channel 24 and closing the port 26.

Modifications may be resorted to within the spirit and scope of the appended claims.

I claim:

1. A closure including a top having a depending annular attaching flange, said top having a continuous circular annular groove formed in its lower side, a centrally disposed venting opening extending through the top and a radial groove connecting the annular groove and opening, and a circular resilient sealing disk disposed in the top, said disk being provided with an eccentrically disposed normally closed venting slit in register with the annular groove.

2. A closure including a top having a depending internally threaded annular attaching flange designed for threaded engagement with the neck portion of a bottle, said top having a continuous circular groove formed on the underneath side thereof and concentric with the attaching flange, a centrally disposed venting opening extending through the top and a radially extending groove connecting the circular groove and opening, and a circular resilient sealing disk disposed in the top, said disk being provided with an eccentrically disposed normally closed venting opening in register with the circular groove in all positions of full threaded engagement between the closure and bottle.

JOHN R. HOGE.