July 19, 1938. J. E. MASBACH ET AL 2,123,906

CONTAINER CLOSURE

Filed Dec. 5, 1936 2 Sheets-Sheet 1

Fig. 1.

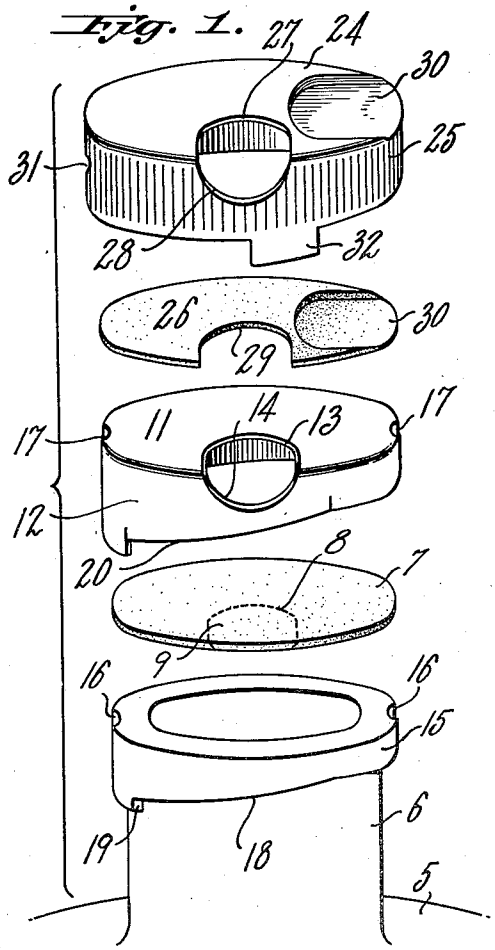


Fig. 5.

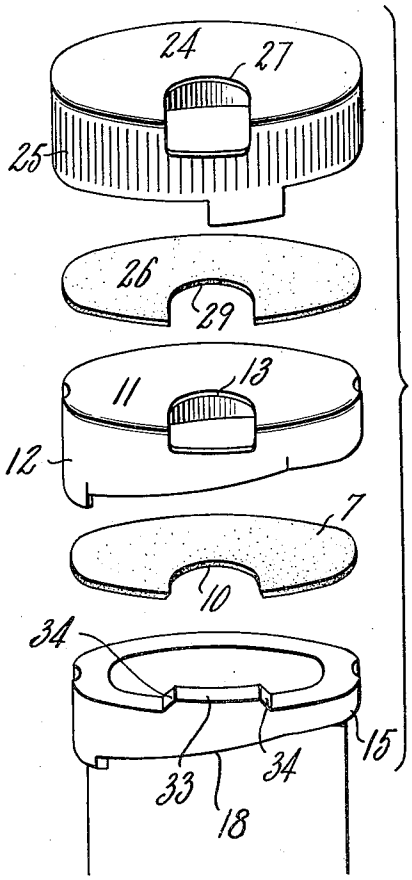


Fig. 4.

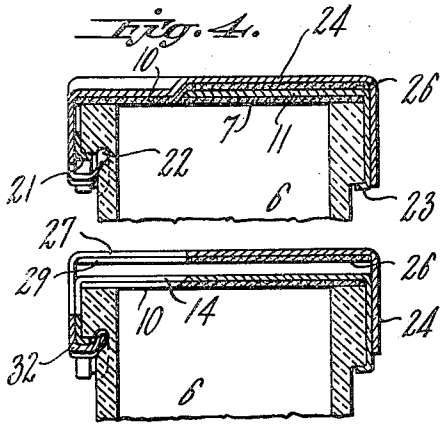
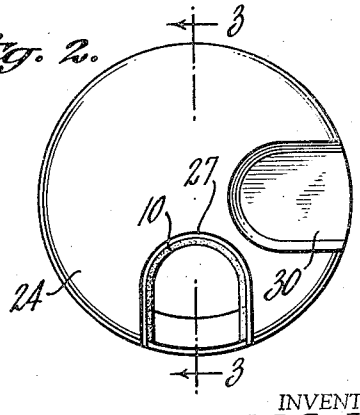


Fig. 3.

Fig. 2.



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Fig. 7.

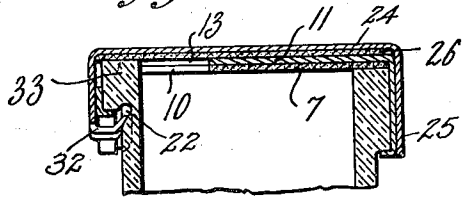


Fig. 8.

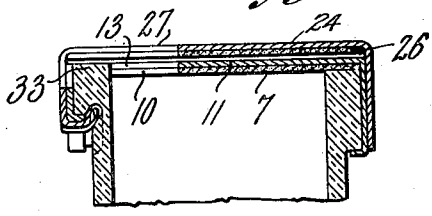
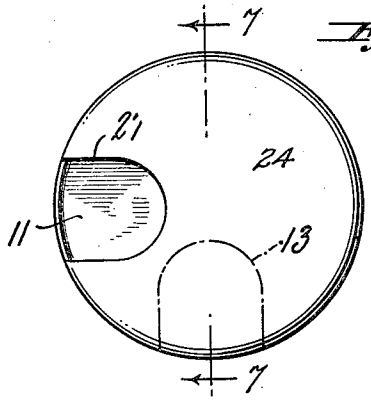


Fig. 6.



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CONTAINER CLOSURE

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Application December 5, 1936, Serial No. 114,306

7 Claims. (Cl. 215—76)

This invention relates to container closures for bottles, cans and other containers or receptacles and has for its general object and purpose to provide certain improvements in a closure of this kind described in our co-pending application for Patent Ser. No. 94,554, filed August 6, 1936.

It is a more particular object of the invention to provide a cap member permanently applied to the neck of the container and having a dispensing opening, together with a rotatable closure mounted upon said cap and provided with an opening therein, to register with said dispensing opening in one position of the closure, and cam means acting upon rotation of the closure in one direction to impart a vertical movement to the closure and engage a part carried thereby within the opening of said cap and in tight sealing contact with the neck wall of the container.

In one embodiment of our invention, the rotatable closure member is provided with a depressed portion in the top wall thereof and a disk of compressible packing material secured thereto, said closure member having a skirt or flange provided with an inwardly turned lug on its edge to cooperate with a cam surface on the bottle neck. In another embodiment of the device, the wall of the bottle neck may be provided with an upstanding lug adapted to exert a compressing pressure against the packing disk carried by the closure member to seal the dispensing opening of the cap.

With the above and other objects in view the invention consists in the improved container closure and in the form, construction and relative arrangement of its several parts, as will hereinafter be more fully described, illustrated in the accompanying drawings and subsequently incorporated in the subjoined claims.

In the drawings wherein we have shown several simple and practical embodiment of the invention and in which similar reference characters designate corresponding parts throughout the several views:

Fig. 1 is a perspective view showing one form of our invention, the several parts thereof being in disassembled relation,

Fig. 2 is a top plan view,

Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2, the closure member being in its open position,

Fig. 4 is a similar view, the closure member being shown in sealing position,

Fig. 5 is a perspective view similar to Fig. 1 illustrating a modified embodiment of the invention,

Fig. 6 is a top plan view thereof,

Fig. 7 is a vertical sectional view taken on the line 7—7 of Fig. 6 with the closure member in its sealing position, and

Fig. 8 is a similar view, the closure member being shown in open position.

Referring in detail to the drawings and for the present more particularly to Figs. 1 to 4 thereof, 5 designates the body of the container having the outlet neck 6. It will be understood, as this description proceeds, that this container may be of various forms and may be constructed of glass, metal, fiber or other materials.

The end opening of the container through which its contents are decanted is covered by a sealing disk 7 of cardboard or other suitable material having direct contact at its outer marginal portion upon the end edge of the container or neck wall 6. This disk, as herein shown, is provided with a line of perforations 8 terminating at each end upon the marginal edge of the disk and defining an area or section 9 thereof which may be thus easily broken and removed to provide a dispensing opening 10 in said disk through which the contents of the container may be poured in suitable volume.

The disk 7 is enclosed within and permanently confined against the edge of the container wall by a sheet metal cap having a top portion 11 and a cylindrical skirt portion 12. The top portion 11 of the cap is provided with an opening 13 the edge of which registers with the line of perforations 8 in the disk 7, and this opening, at the outer edge of the top 11 of said cap is continued downwardly in the skirt portion 12 thereof, as shown at 14, said vertical section 14 of the opening extending below the end edge of the container neck.

The construction as thus far described substantially corresponds to the disclosure of our pending application. In this case, however, the wall of the bottle neck at its outlet end is thickened to provide an external flange 15 thereon said flange at diametrically opposite points being provided with vertically extending grooves 16 in its outer surface adapted to receive internal beads or ribs 17 formed on the wall of the skirt 12 of the cap member. Between the grooves 16, at one side of the container neck, the lower face of the flange 15 is formed with a circumferentially extending cam surface 18 terminating at one of its ends in a stop shoulder 19.

The skirt 12 of the cap member has a lower edge portion 20 circumferentially curved correspondingly to the cam surface 18. When the

cap member with the assembled sealing disk 7 is applied to the container neck, the ribs 17 engaging in grooves 16 serve to accurately locate the edge 20 of the skirt 12 with respect to the cam surface 18. After such application of the cap this edge portion 20 is bent inwardly over and upon the cam surface 18, as indicated at 21. The wall of the bottle neck at the inner side of the cam surface 18 is formed with the groove or channel 22, co-extensive in length with said cam surface, for a purpose which will hereinafter appear. The remaining lower edge portion of the skirt 12 is also flanged inwardly beneath the flange 15 of the container neck, as shown at 23, so that the metal cap member with the sealing disk 7 are thus permanently locked or secured upon the neck of the container.

The rotatable closure, superimposed upon the fixed metal cap above described, also consists of a relatively thin sheet metal top wall 24 having the depending skirt 25 which is preferably knurled so as to permit the same to be securely gripped and easily rotated. This top wall of the closure member is provided with a liner 26 of a suitable compressible material, said top wall having an opening 27 therein extended downwardly into the skirt or flange 25 as shown at 28. The compressible disk 26 also has an edge portion thereof removed to provide the opening 29, corresponding substantially in shape with the openings 10 and 13, and registering with the opening 27 in the wall 24 of the closure. Said wall and its liner sheet 26, are formed with a depression, indicated at 30, which substantially corresponds in form and dimensions with the opening 13 in the fixed metal cap and the opening in the sealing disk 7.

The closure member is initially assembled with its opening 27 in registering relation with the opening 13 in the cap member by means of the indentation 31 formed in the wall of the skirt 25, which is adapted to be engaged in one of the external grooves resulting from the formation of the ribs 17 on the skirt 12 of the cap member. At the same time, the downwardly projecting lug 32 on the lower edge of the skirt 25 is properly located at the high end of the cam surface 18 on the container neck. This lug is then bent inwardly upon the flange 21 of the cap member and its end edge projects upwardly into the groove 22 in the neck wall of the container, as clearly shown in Fig. 3 of the drawings. This cam lug is of sufficient width to thus render the bending thereof and its disengagement from the groove 22 exceedingly difficult, so that, for all practical purposes, it serves to effectually lock the rotatable closure member in its applied position upon the metal cap.

When the parts are first assembled as above described, the depressed portions 30 of the top wall of the closure and its liner sheet are superposed on the top wall of the fixed metal cap and disposed at substantially a right angle to the opening 13 in said cap. Therefore the remaining portion of the top wall 24 of the closure and its liner sheet will be spaced above the top wall of the cap as shown in Fig. 3 of the drawings. The rotatable closure member is releasably retained in this position by the engagement of the indentation 31 on its skirt or flange in the vertical groove of the cap member.

Assuming that the section 9 of the disk 7 has been broken out or removed, and a part of the contents of the container decanted through the registering openings 27 and 13 of the closure and cap members, the container may then be securely sealed by rotating the closure member through 90 degrees. As the lug 32 on the closure member rides downwardly upon the cam flange 21 of the cap member, a compressing pressure is first applied to the disk 26 carried by the closure member, and as this pressure increases the top wall 24 of said member is slightly flexed and forced upwardly. When the depressed portions 30 are approximately in register with the opening 13 of the fixed metal cap, the top wall of the closure member resumes its normal condition, and said depressed portions 30 of the closure member and its liner sheet 26 are forced downwardly into the opening 13 in the top of the metal cap and the opening 10 of the disk 7. Thus as the lug 32 rides upon the lower portion of the cam face 18 and comes into contact with the stop shoulder 19 the depressed portion of the liner sheet 26 will be tightly compressed against the end face of the container neck wall at the opening 13 in the metal cap. Preferably, as in our prior application, the edges of the openings 8 in the disk 7 and 13 in the metal cap are inclined or beveled so as to facilitate a tight sealing contact of the depressed portion of the liner sheet 26 with the edges of said openings as well as with the end of the container neck. In this manner, a very effective sealing of the dispensing opening in the fixed metal cap is assured when the closure member is rotated to its closed position.

In Figures 5 to 8 inclusive we have illustrated a modified form of our invention in which instead of providing the closure member and its liner with the depressed portions 30, the neck wall of the container is formed with an upstanding lug 33. The sealing disk 7 in this case has the portion 9 removed therefrom to provide the opening 10 prior to the application of the disk to the end face of the container neck. Preferably, the end faces of the lug 33 are beveled, as indicated at 34, and the edges of the opening 10 in the disk 7 and the opening 13 of the metal cap are correspondingly beveled so that when said disk and cap are applied and permanently secured to the container neck, the lug 33 is received within the outer end of the openings 10 and 13, and with the edges of said openings in tight sealing contact with the beveled faces 34 of said lug.

Otherwise, this modified construction is substantially the same as that previously described. In this instance however, the degree of inclination of the cam face 18 can be relatively slight, as the vertical movement of the closure member relative to the metal cap need not be very great. When said cap is rotated to move the opening 27 thereof out of register with the opening 13 said closure member is forced downwardly so that its compressible liner 26 is brought into tight sealing contact at its outer edge against the end face of the lug 33 on the neck wall of the container to thus effectively close the opening 13. As shown in Fig. 8, the inclination of the cam face 18 is such that when the closure member is rotated to open position, it will also move upwardly to a slight extent as the opening 29 of the line 26 registers with the opening 13.

From the foregoing description taken in connection with the accompanying drawings it will be seen that we have devised a very simple and effective closure means for containers such as are used for vending liquors and other products. While the device is of relatively simple and in-

expensive construction, it protects the consumer against fraudulent practices, while enabling the container to be easily and quickly opened or closed. Also, by the provision of an effective sealing means for the opening through the container cap, after the contents of the container have been partly consumed, protection of the said contents against contamination and possible leakage and waste thereof is obviated. It will also be noted that our device is of such construction that in pouring or decanting the liquid from the container, it will not contact with the metal parts of the cap or closure members.

We have illustrated the device in its application to a bottle or container of glass but it will be understood that with certain minor modifications our invention may also be advantageously used upon containers of metal or fibrous materials, and in which the cap member may be either a separate element or integrally formed with the outlet neck of the container. Further, while we have disclosed several simple and practical embodiments of our present invention, it is to be understood that the essential features thereof may be susceptible to various changes in the form, proportions and detail arrangement of the several parts and we accordingly reserve the privilege of adopting all such legitimate variations thereof as may be fairly comprehended within the spirit and scope of our invention as claimed.

We claim:

1. In combination with a container, having an open end and an external circumferentially extending cam surface in spaced relation thereto, a sealing disk permanently secured over the open end of the container and having a removable edge portion to provide a dispensing opening, and a rotatable closure member having a top portion and a skirt portion surrounding said open end of the container, said top portion having a depressed part and said skirt portion having an inwardly turned lug on its edge cooperating with said cam surface whereby said closure member is vertically moved to position said depressed part within the dispensing opening and in sealing contact with the wall of the container in one position of said closure member, and said top portion of the closure member having an opening therein to register with said dispensing opening in another position of the closure member.

2. In combination with a container, having an open end and an external flange surrounding the same, said flange having a lower circumferentially extending cam surface, a metal cap having a sealing disk therein provided with a dispensing opening and said disk having a removable edge portion in register with said opening, said cap having a cylindrical skirt portion, said skirt portion and the flange on the container having coacting means acting to position a section of the lower edge of said skirt portion in register with the cam surface on the container flange when the cap is applied and said edge section being bent over upon said cam surface, and a rotatable closure member superimposed upon said cap and having a lug coacting with the cam flange on the skirt of said cap.

3. In combination with a container, having an open end and an external flange surrounding the same, said flange having a lower circumferentially extending cam surface, a metal cap having a sealing disk therein provided with a dispensing opening and said disk having a removable edge portion in register with said opening, said cap having a cylindrical skirt portion, said skirt portion and the flange on the container having coacting means acting to position a section of the lower edge of said skirt portion in register with the cam surface on the container flange when the cap is applied and said edge section being bent over upon said cam surface, and a rotatable closure member superimposed upon said cap and having a lug coacting with the cam flange on the skirt of said cap, and the wall of the container at the inner side of said cam surface being provided with a groove receiving the terminal end of said lug.

4. In combination with a container, open at one end and having an external flange provided at the lower edge thereof with a circumferential cam surface and a groove extending in parallel relation to the cam surface at the inner side thereof, a sealing disk permanently secured over the open end of the container and having a removable edge portion to provide a dispensing opening, and a rotatable closure member having a compressible liner and a skirt surrounding said flange said skirt having a lug at its lower edge extending inwardly over said cam surface and into said groove and acting, upon rotation of said closure member, to vertically move the same and compress said liner against the edges of the dispensing opening and the wall of the container in one position of the closure member, and said member and liner sheet having coinciding openings to register with said dispensing opening in another position of the closure member.

5. In combination with a container, open at one end and having an external flange provided at its lower edge with a circumferential cam surface and with a lug projecting upwardly above the open end of the container, a metal cap permanently secured to the container and having a sealing disk therein, said cap and disk having coinciding dispensing openings through which said lug projects, the edges of said openings having substantially fluid tight contact with the opposite ends of the lug, and a rotatable closure member superimposed upon said cap having a compressible liner therein, said liner and cap having coinciding openings to register with said dispensing openings in one position of the closure member, and said closure member having a lug extending over said cam surface and cooperating therewith when said closure member is rotated to another position to compress said liner sheet upon the end face of said lug and with the wall of said cap around the dispensing opening therein.

6. In combination with a container having an open end and an external circumferentially extending cam surface in spaced relation thereto, a metal cap provided with a dispensing opening and a sealing disk in said cap having a removable edge portion in register with said opening, means for securing said cap in a stationary position over the open end of the container, and a rotatable closure member superimposed upon said cap and having a skirt portion provided with a lug to coact with said cam surface when said member is rotated to closed position to move the same axially into sealing contact with said cap, said closure member having a top portion provided with an opening movable into and out of registration with the dispensing opening in said cap.

7. In combination with a container having an open end and an external circumferentially extending cam surface in spaced relation thereto, a metal cap provided with a dispensing opening and a sealing disk in said cap having a removable edge portion in register with said opening, means for

securing said cap in a stationary postion over the open end of the container, and a rotatable closure member superimposed upon said cap and having a skirt portion provided with a lug to coact with said cam surface when said member is rotated to closed position to move the same axially into sealing contact with said cap, said closure member having a top portion provided with an opening movable into and out of registration with the dispensing opening in said cap, and said top portion of the closure member having a part adapted to be received in the dispensing opening of said cap when said member is moved to closed position and having sealing contact with the wall of the container.

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