Dec. 17, 1929. J. M. HOTHERSALL 1,739,759

CONTAINER CLOSURE

Filed June 6, 1927

Fig. 1

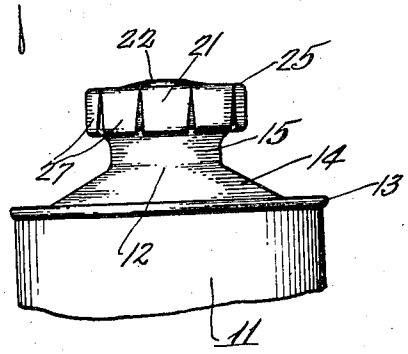
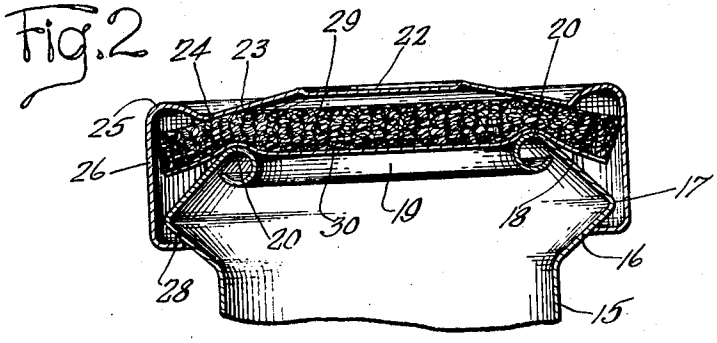


Fig. 2



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CONTAINER CLOSURE

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This invention relates in general to closures for containers adapted to be flexed in different parts for releasing and applying the closure caps. Such closures are released by depressing a bulged top which spreads locking fingers at the sides, and pressure upon the top edge and sides contracts the fingers and restores the bulge of the top.

Unless the parts of a closure of this type are properly proportioned, it has been found that it opens more easily than it is closed, necessitating careful handling in shipment and storage to prevent accidental opening.

A principal object of the invention, therefore, is the provision of means for preventing accidental opening of the closure without the use of a locking band or other device separate from or additional to the cooperative construction of the container mouth and cap.

Another object of the invention is the provision of reinforced nozzle and cap construction which will withstand rough handling and prevent injury before filling and closing.

Numerous other objects of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a side elevation of a portion of a container provided with a closure embodying this invention; and

Fig. 2 is a vertical section showing the cooperative construction of the parts in detail.

In carrying out this invention, the container mouth or nozzle and the cap constructions are proportioned to provide an improved flexing leverage, so that it is difficult to open the closure accidentally, or by bumps and shocks which are incidental to the handling and transportation of filled containers.

Referring more particularly to the drawings, a sheet metal container 11 of any well-known type and shape is provided with a pouring mouth or nozzle 12 secured to the upper edge 13 of the body. The nozzle has a tapered or conical breast 14 with an upright neck 15 rising therefrom, which is flared outwardly, forming an inclined surface 16 extending to an angular shoulder 17 and then gradually reduced, forming a conical surface 18 substantially at right angles to the inclined surface 16, the inner and upper edge being turned inwardly forming a strengthening curl or bead 19 and an upper, slightly rounded, sealing ridge 20.

The flexing cap 21 comprises a raised domed, or bulged central portion 22, and a connected frusto-conical portion 23, having a channel portion 24 which continues outwardly and upwardly to form an outer raised margin 25, thence turned downwardly to provide a depending skirt 26 slit at intervals to form segmental locking fingers 27 which have inwardly turned engaging flanges 28.

Insertable between the nozzle and the locking cap is a sealing disk or packing 29 of felt or other suitable material, which is compressible, and this packing has a facing or covering 30 of fluid tight material, such as lead foil, either on both sides of the packing or preferably only on that side which contacts with the sealing ridge 20. This sealing disk 29 is preferably of such diameter as to fit closely within the sealing cap by frictional engagement with the inner wall or skirt portion, even though the cap is not applied to the container.

In applying the cap to the container, pressure applied to the bulged top 22 forces it from the outer side of a central plane to the inner side thereof, which expands the fingers of the depending skirt, allowing the locking flanges 28 to clear the outer shoulder 17 of the container nozzle. Pressure is then applied to the rounded margin 25 and also against the skirt portion 26, which returns the central dome 22 to its original position and locks the segmental flanges 28 yieldingly against the inclined surface 16 of the container nozzle at a distance below the shoulder 17.

To remove the cap from the container, the dome 22 is depressed, which expands the outer ends of the fingers 27 and frees the flanges 28 from engagement with the inclined surface 16, clearing the shoulder 17, so that the cap can be freely lifted from the container.

If there is a sealing disk, as 29, in the cap

21, the application of a slight pressure in attaching the cap will distort the packing as indicated, for example, in Fig. 2, pressing the fluid tight material 30 tightly against the sealing ridge 20, so that the flanges 28 of the cap engaging the inclined surface 16 of the nozzle will hold the packing yieldingly in fluid tight engagement, the flanges sliding upon and engaging the inclined surface 16 depending upon the pressure applied to the cap.

In previous closures of this type the fulcrum of the cap being close to the outer edge provided a long leverage for the opening operation and a short leverage for the closing operation, resulting in a closure easily opened by a comparatively slight pressure upon the domed part, thereby causing accidental opening and spilling of the contents.

To prevent accidental unlocking of this cap, the sealing ridge 20 against which the cap acts in its flexing action, is disposed inwardly from the outer edge of the cap and as near to the central dome 22 as possible. The channel 24 is also at a distance inwardly from the outer edge of the cap with the adjacent frusto-conical part 23 disposed for engagement with the sealing ridge 20 or with the sealing disk 29 interposed therebetween. This brings the fulcrum point of the cap as far inwardly or as near to the central part of the cap as possible, thereby reducing the length of leverage for an opening pressure application, so that containers of this type are uniformly and substantially proof against accidental opening.

The nozzle bend between the parts 15 and 16, the shoulder 17 and the curl or bead 19 greatly reinforce the nozzle and help to protect it from injury before the container is filled.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A flexing closure, comprising a cap having a central domed portion and depending locking fingers operated by a flexing movement of the dome, the cap having an annular flexing line at a distance from the periphery thereof and a smaller circular flexing line at the top of the cap to equalize the flexing leverage of the domed portion and of the locking fingers.

2. A sheet metal flexing cap having at its margin depending locking fingers adapted to engage beneath a projecting part of a nozzle, said cap having an outer circular line of flexure near said fingers, a smaller inner circular line of opposite flexure near its top, said cap inclining upward from the outer to the inner line of flexure, and an elevated central panel adapted to be depressed to a plane below the plane of said first line of flexure, whereby said fingers are caused to move radially outward and disengage from said projecting part of the nozzle.

3. A sheet metal flexing cap having at its margin depending locking fingers adapted to engage beneath a projecting part of a nozzle, said cap having an outer circular line of flexure near said fingers, a smaller inner circular line of opposite flexure near its top, said cap inclining upward from the outer to the inner line of flexure, and an elevated central panel adapted to be depressed to a plane below the plane of said first line of flexure, whereby said fingers are caused to move radially outward and disengage from said projecting part of the nozzle, and a sheet metal nozzle bent outward to form a shoulder and having its margin curled inward and downward to form a circular rounded seat, and a gasket between said seat and the inclined part of the cap.

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