Dec. 17, 1935. R. C. WOLFE 2,024,495

CAP FOR CONTAINERS

Filed March 27, 1934

Fig. 1.

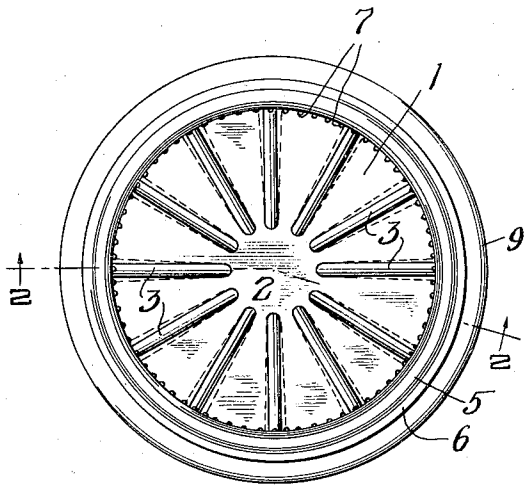


Fig. 3.

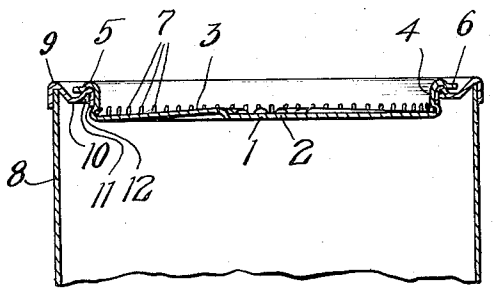


Fig. 4.

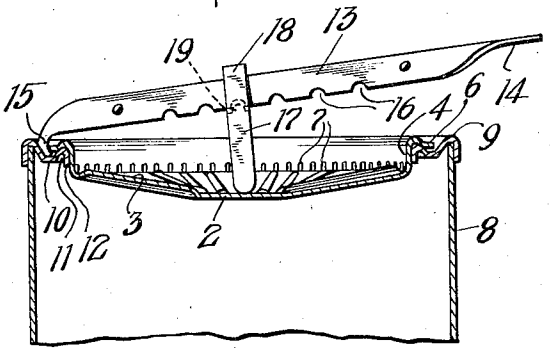


Fig. 2.

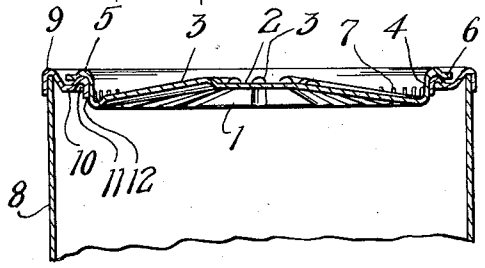


Fig. 6.

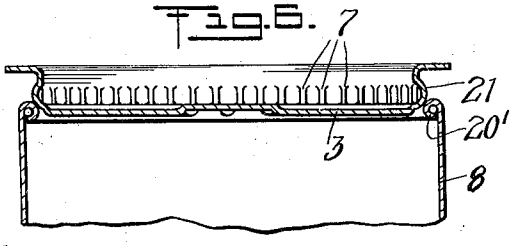


Fig. 5.

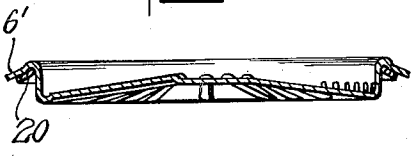
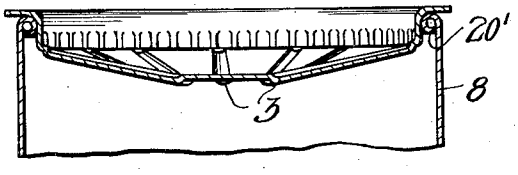


Fig. 7.



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CAP FOR CONTAINERS

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8 Claims. (Cl. 220—59)

This invention relates to caps or closures, preferably metallic in character, adapted to be employed in conjunction with types of containers such, for instance, as the usual and conventional tin cans.

The principal object of the invention is the production of a novel cap of simple construction which may be easily applied to a container and automatically secured thereto in locking position by pressure applied against the cap in question.

A further object of the invention is the production of a container cap having the characteristics above described and so constructed as to enable it to be automatically brought into unlocking position for removing the same from the container upon further application of pressure thereto after pressure has been exerted thereagainst sufficient to bring it into locking position.

In the accompanying drawing illustrating a practical embodiment of the invention:

Fig. 1 is a plan view of a container cap showing the preferred embodiment of the invention.

Fig. 2 is a section taken through the cap on the line 2—2 of Fig. 1 showing it applied in the opening in the top wall of any form of container, a fragmentary portion only of the container being shown.

Fig. 3 is a similar view showing the cap in locked position.

Fig. 4 is a similar view showing the cap after it has been brought into unlocked position while still in engagement within the opening in the top wall of the container.

Fig. 5 is a view similar to Fig. 2 of the cap (the container, however, not being shown), the cap in this instance having a rubber or other resilient gasket applied thereto.

Fig. 6 is a section taken through a modified form of cap showing it before its application within the opening of the top wall of the container, and

Fig. 7 is also a section of the cap showing it applied within the opening of the container but in a position such as to render it readily removable.

Referring in detail to the several figures of the drawing:

1 indicates the head of the cap which is cone-shaped and preferably has the configuration of a truncated cone with the central portion of said head being flattened as at 2. Said head is provided with a series of upwardly extending beads or ribs or corrugations 3, preferably equi-distantly spaced apart and extending from the lower circumferential edge of said head to the flattened portion 2. The head is provided with an upwardly extending annular flange or skirt 4 integral therewith which terminates in an outwardly extending annular bead 5 having a free edge or flange 6. The lower side of the skirt or flange 4 is preferably provided throughout its circumference and extending from its edges with the inwardly extending corrugations forming crimping or knurling 7.

The body of the container or receptacle with which the cap is to be applied in order to close the same is indicated at 8. Said receptacle has secured thereto in any manner an upper wall 9 channeled as at 10, the inner side of said channel having a bead 11 which terminates in a downwardly extending annular flange 12 which forms an annular opening in the top of the container or receptacle. To apply the cap of the invention to said opening in said upper wall 9 of the container said cap is slipped therein so that the upwardly extending annular skirt or flange 4 of the cap will engage the downwardly extending annular flange 12 of the upper wall of the container all as shown in Fig. 2. To lock the cap within said opening so as to seal the contents of the container pressure is applied downwardly against the cap and preferably to the flattened central portion 2 of the truncated cone so as to bend or expand said head until it assumes, or substantially assumes, the horizontal position shown in Fig. 3. When so bent or expanded the beads or ribs 3 expand and flatten to an extent as do the corrugations 7 which in turn forces the peripheral lower edge of the annular skirt or flange 4 to expand outwardly so that it will engage beneath the lower edge of the annular flange 12 of the head of the container as illustrated in Fig. 3 and thus prevent removal of the cap.

It will be understood that in many cases the locking and sealing position of the cap may be effected even though it does not assume the horizontal position shown in Fig. 3, it being necessary merely that the metal be flattened and the ribs 3 and corrugations 7, or either of them, be expanded to an extent sufficient to force the lower circumferential edge of the head of the cap beneath the lower edge of the flange 12 of the upper wall of the container It will be further understood that it is not necessary to provide the container with an upper wall as such, it being necessary merely in some cases that it be provided with a bead or other projection at or adjacent its upper edge beneath which the cap may engage when in locking position.

After the cap has been expanded into locking or sealing position, in order to remove the same,

further pressure downwardly is exerted thereagainst preferably at the truncated or central portion thereof so that it will assume the position shown in Fig. 4 and it will then become an inverted truncated cone. Such pressure, as is obvious, has the effect of contracting the beads or ribs 3 and corrugations 4 into their original position which in consequence contracts the lower circumferential edge of the cap permitting the cap to be withdrawn from the opening in the upper wall 9 of the container or receptacle.

For exerting pressure against the cap to expand it into locking or sealing position or to contract it into unlocking position, as has been hereinbefore described I may either apply the pressure manually or may employ a suitable tool which is illustrated in Fig. 4, or any other form of tool or object may be employed to tap or push the cap downwardly. The tool illustrated comprises a somewhat flattened rod 13 having a handle 14 on one end thereof and a hook 15 on the other end thereof. The lower edge of said handle is provided with notches 16 and carries a pressure-exerting arm or device 17 looped at its upper end as at 18 for receiving the handle. The inner lower portion of said loop is provided with a lug 19 therein adapted to enter any desired notch 16 so that the relative position of the arm 17 with respect to the rod 13 may be varied depending on the diameter of the cap. When in use, the hook 15 engages beneath the free edge or flange 6 of the cap and the lower end of the arm 17 engages against the truncated or flattened portion 2 of the cap. As is manifest, pressure exerted against the handle 14 causes the lower end of the arm 17 to exert downward pressure against the cap.

In Fig. 5 the free edge of flange of the cap which is indicated at 6' flares downwardly to a certain degree so as to form a pocket for the reception of a rubber or other compressible gasket 20.

It is important that the metal of the cap be tempered to such a degree of hardness or softness as to give it sufficient pliancy to permit it to be expanded or contracted in the manner hereinbefore described.

In the modification shown in Figs. 6 and 7, the upper wall of the container as such is dispensed with and the upper circumferential edge of the container is turned over to form a bead 20' forming the opening in the container. The metal of the cap is tempered to a degree which makes it appreciably more resilient or springy than the metal of the cap described in the preferred form of the invention and the lower edge of the cap is provided with an outwardly extending annular bulge or bead 21 of a diameter normally greater than the opening in the container as shown in Fig. 6. To seal the cap within said opening, pressure is exerted downwardly thereagainst which contracts or presses the bulge or bead 21 inwardly until it clears the bead 20' of the container whereupon, because of its inherent spring or resilient characteristic, it will again automatically expand into its original position and thus lock itself underneath the bead 20'. To remove said cap from its sealing and locking position within the opening of the head of the container, pressure is again applied downwardly against said cap to cause the bead or bulge 21 to again contract and at the same time permit the cap to be withdrawn from the opening. When in position before insertion or withdrawal the cap assumes the configuration shown in Fig. 7. Also in this modification the ribs 3 are shown extending downwardly instead of upwardly as in the preferred form of the invention.

Various modifications may be resorted to without departing from the spirit of the invention as set forth in the appended claims.

The invention claimed is:

1. In combination with a container provided with a projection therein at or adjacent its upper edge, a removable and deformable metallic cap adapted to be inserted within said container and provided with a lower peripheral edge adapted to be expanded laterally and to engage beneath said projection upon the application of pressure exerted against said cap and to be contracted into normal position upon the further application of pressure thereagainst to cause contraction of said peripheral edge and thereby permit removal of the cap from the container.

2. In combination with a container provided with an opening and a depending part, a metallic, removable and expandable cap adapted to enter said opening and to have a portion thereof expanded beneath the edge of said part upon the application of pressure against said cap in order to seal said container, said expanded portion of said cap being also adapted to be contracted to permit removal of the cap from the container upon the application of further pressure against said cap.

3. In combination with a container provided with a depending flange forming an opening, a cap having a plurality of ribs therein and a circumferential edge, said ribs being adapted to be expanded whereby said edge will engage beneath said depending flange upon the application of pressure against said cap to seal said container and said ribs being adapted to be contracted automatically upon the application of further pressure against said cap to permit said cap to be withdrawn from the opening in said container.

4. In combination with a container provided with a depending flange forming an opening and a cone-shaped cap having a plurality of ribs therein extending radially from the circumferential edge of said cap toward the center thereof, said ribs being adapted to be expanded whereby said edge will engage beneath said depending flange upon the application of pressure to said cap to seal said container and said ribs being adapted to be contracted automatically upon the application of further pressure against said cap to flex the bottom of said cap downwardly and thereby permit said cap to be withdrawn from the opening in said container.

5. In combination with a container having a depending annular flange forming an opening, a cone-shaped cap adapted for insertion within said opening and provided with a skirt having an outwardly extending annular flange, said skirt being crimped adjacent its circumferential edge whereby said skirt will be expanded laterally beneath said flange upon the application of pressure against said cap.

6. In combination with a container provided with a depending flange forming an opening, a metallic cap comprising a truncated cone and having a plurality of radially extending ribs therein and provided with a crimped skirt adapted to engage said depending flange, a portion of the metal of said cap being adapted to be expanded laterally to engage beneath said depending flange upon the application of pressure against said cap to seal said container.

7. In combination with a container having an

opening therein, a spring, removable metallic cap adapted to be inserted in said opening and provided with a skirt having a bulge or bead thereon, said bulge or bead having a diameter normally in excess of the diameter of the opening and being adapted to be contracted upon application of pressure to said cap to permit the insertion of the said cap in the aforesaid opening whereby the said bulge or bead will automatically expand to lock against the container to seal the same when said cap is completely inserted within said opening.

8. In combination with a container having a depending annular flange forming an opening, a spring, removable metallic cap adapted for insertion within said opening and having a skirt provided with a plurality of ribs therein, a bulge or bead on said skirt adapted to be contracted whereby said bulge or bead will engage beneath the lower edge of said flange when pressure is applied against said cap and said bulge or bead being also adapted to be contracted to permit removal of said cap from said opening upon the application of further pressure upon said cap.

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