June 25, 1929. C. HAMMER 1,718,459

ROTATABLE VACUUM SEALED CAP

Filed Dec. 9, 1927

Fig. 1.

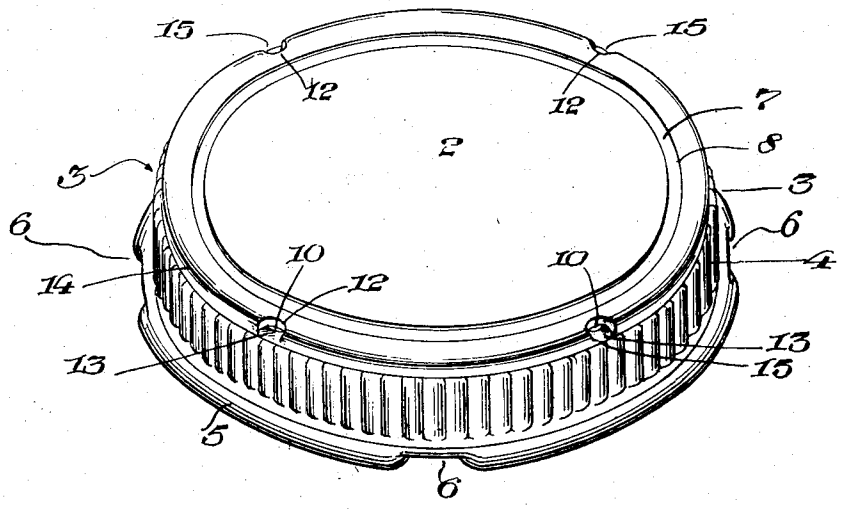



Fig. 2.

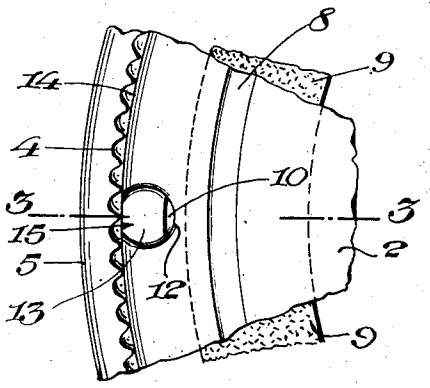
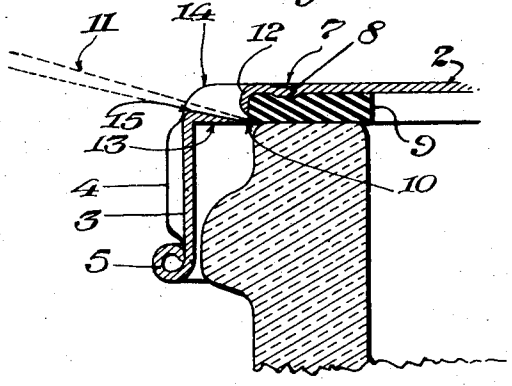



Fig. 3.




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# UNITED STATES PATENT OFFICE.

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## ROTATABLE VACUUM-SEALED CAP.

Application filed December 9, 1927. Serial No. 238,741.

This invention relates to caps or closures for containers, an object of the invention being to provide an improved self-sealing rotatable vacuum cap particularly adapted without the use of a separate liner plate for use in the hermetic sealing of containers such as glass containers.

One of the objects of the present invention is the provision of an improved rotatable cap having a punched opening of substantially pin size therein as distinguished from a slotted or cut opening which will permit the use of a handy pointed instrument such as the prong of a fork or a pin to release the sealing member and thereby the cap from the mouth edge of the container without the distortion or mutilation of such sealing member and which opening is of such size and location that the skirt of the cap is not weakened so that the cap will not buckle and leak when pulled down on the container.

Where a rotary cap has been used for the vacuum sealing of containers it has been necessary to provide the cap with a liner plate carrying a gasket of rubber or suitable composition since otherwise the cap could not be released without mutilation, and the present invention has to do with the provision of a rotary metal cap which can be used for the vacuum sealing of containers without the necessity of providing the cap with a liner plate thereby materially reducing the cost of such cap. Heretofore, the use of a rotary cap without a separate liner plate has not been considered practical for the vacuum sealing of containers for the reason that when this cap is provided either with lugs or threads and the container is hermetically sealed it is practically impossible to turn the cap off of the container. The object of the present invention therefore is the provision of an improved rotary cap which can be used without a liner plate for the vacuum sealing of containers and which is provided with means which will permit the cap to be quickly and effectively released so that it may be rotated backward off of the container. Heretofore it has been attempted to cut slots in caps for the insertion of a sharp instrument located in such position that the cap is released from the gasket rather than the gasket from the container. Such slots in the side of the cap materially weaken the skirt at these points causing the cap skirt to buckle when the cap is pulled down on the container and thus cause the cap to leak and prematurely release the vacuum. Furthermore these pieces of metal cut out to form the slots get into the cap forming dies and cause considerable trouble in the manufacture of the caps. The present improvement avoids these disadvantages in that the openings are so located that they may be made of very small size sufficient only for the insertion of a pointed instrument such as a fork prong or pin so that there is no weakening of the cap or skirt and being punched in the cap there are no small pieces of metal to get into and interfere with the operation of the cap forming dies. Furthermore, the openings being of pin point size there is no likelihood of material damage to the gasket to prevent the reuse of the cap in resealing the container and yet the opening is of sufficient size to quickly and efficiently release the vacuum and permit the cap to be readily turned off of the container.

In the drawings accompanying and forming part of this specification, Fig. 1 is an enlarged perspective view of this improved cap; Fig. 2 is an enlarged detail view of a part of the cap and Fig. 3 is a cross sectional view on line 3—3 Fig. 2 and showing a part of a container.

Similar characters of reference indicate corresponding parts in the several views.

Before explaining in detail the present improvement and mode of operation thereof, I desire to have it understood that the invention is not limited to the details of construction and arrangement of parts which are illustrated in the accompanying drawings, since the invention is capable of other embodiments, and that the phraseology which I employ is for the purpose of description and not of limitation.

In the preferred form thereof shown this cap comprises a top 2 having a depending flange or skirt 3 provided with suitable corrugations 4, which serve to reinforce the skirt of the cap, and act as gripping means for turning the cap on and off and also as a means for assisting the formation of the cap in the rolling or forming dies. The lower edge of the cap is strengthened as by curling, beading or rolling it to form a curled or

beaded edge 5. The cap is furthermore provided with suitable locking or holding means of any desired or preferred form, in the present instance this locking or holding means comprising inwardly extending lugs or projections 6 of concave or arc-shaped form combined with or formed from the curled edge. The top of the cap is depressed as at 7 to form an annular projection or bead 8 on the inside of the cap in position to cause the gasket to engage the top of the container firmly. Located in the cap is a flat ring gasket 9 of rubber or suitable composition. The lugs of the cap prevent the dropping out of the gasket ring from the cap during the handling of the cap.

To permit the proper and quick release of the gasket or sealing member from the container and thereby permit the quick release of the cap I have provided the cap with a small opening 10 which may be punched therein or formed in any other suitable way and located substantially at the corner or juncture point of the top and skirt and above the corrugations and shown partly located in the annular band 14 usually formed above the corrugations. This aperture is so formed that a handy sharp instrument such as a fork prong or pin 11, Fig. 3, may be used to release the vacuum and will be caused to project into the cap in a substantially horizontal direction whereby it will provide an air space or vent at one side of the gasket. The location and formation of this opening is therefore important. In the present instance this opening is so located that the air opening will be formed between the under face of the gasket and the top of the container and is so formed and located that a sharp instrument may be inserted without materially injuring the gasket so that the cap and its gasket may be reused for resealing the container. By the provision of an opening of the small size described and which may therefore be properly designated herein as a "pin point opening" and the proper location thereof, a handy sharp instrument of small size such as a prong of a fork or a pin can be readily used to permit the ingress of air and thus quickly release the vacuum and permit the cap to be rotated or turned backward off the container. In the form and size of cap shown four of these openings are provided being shown located one midway between each pair of lugs, which is an advantageous location.

From the foregoing it will be seen that this small pin-point opening is located substantially at the corner or juncture of the top and the skirt and therefore above the upper end of the corrugations and is so located that a protecting and guiding wall is obtained formed by the inpunched portions of the metal 12 of the top and 13 of the skirt to surround the opening and thus form a guide 15 for directing and leading the prong of the fork, pin or other pointed instrument in the proper direction to avoid mutilation of the gasket, this being in a substantially horizontal direction, so that when a flat ring gasket is used the point of the instrument will be guided into position toward the under face of the gasket and thus be forced to engage the lower edge of the gasket resting on the top of the container and release the gasket at this point and so permit the quick ingress of air and therefore the quick release of the vacuum and consequently permitting the ready turning off of the cap which would otherwise be impossible without the mutilation of the cap and of the gasket. In caps of this kind having a comparatively long skirt it would be impossible to get at the gasket to release the vacuum except by the mutilation of the cap as by punching a hole through the top or otherwise mutilating it which would of course destroy its effectiveness for resealing purposes.

It is well known that in the use of non-rotatable friction held caps, for instance, for vacuum sealing, it is practically necessary to rip or mutilate the skirt of the cap in order to release it and this to such an extent that the reuse of the cap for effectively resealing the container is impossible aside from the fact that the housewife finds them both dangerous and a nuisance aside from the difficulty of opening them.

Thus I have provided an improved rotary cap which can be readily used for sealing and resealing without a separate or independent liner plate and therefore which can be sold much more cheaply and in which the opening is only sufficiently large for the insertion of a pointed instrument such as a pin or prong of a fork and the walls of which around the opening on the inside of the skirt act as a guiding means for such pointed instrument and permit it properly to perform its work without injury to the gasket and whereby also the formation of chips and particles of metal which would ordinarily get into the cap forming dies is avoided and whereby the weakening of the cap or of the skirt thereof causing it to buckle and leak and thus prematurely releasing the vacuum is also avoided, and whereby also the vacuum can be readily released by any handy pointed instrument such as a pin or a prong of a fork, thus avoiding the housewife searching for some particular device suitable for the purpose and which will also avoid the necessity of ripping, tearing or otherwise multilating the cap or its gasket and the consequent danger of injury from this procedure.

Furthermore a pin point opening of this kind not only does not weaken the cap but

it can be more quickly and easily put into the cap than a slot, since no metal is cut out as is necessary when a slot is formed so that the cap is not weakened and moreover this small wall protected opening can be put in when the cap is being blanked out into a hat-shaped shell, which is not practical when slots are cut into the cap.

I believe I am the first to provide a cap and especially a rotary cap with an opening of either of the size or location described or a wall protected opening as contra-distinguished from a cut or a slot whereby the several advantages hereinbefore referred to are obtained.

It is to be understood that by describing in detail herein any particular form, structure or arrangement, it is not intended to limit the invention beyond the terms of the several claims or the requirements of the prior art.

Having thus explained the nature of my said invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made, or all of the modes of its use, I claim:

1. A cap or closure for containers comprising a top having a depending skirt provided with container securing means, and a sealing member carried by said cap in juxtaposition to its top, said skirt having an opening of subtsantially pin size located adjacent to the juncture point of the top and skirt for the insertion of a pin or prong of a fork to release the vacuum.

2. A cap or closure for containers comprising a top having a depending skirt provided with container securing means, and a sealing member carried by said cap in juxtaposition to its top, said skirt having an inwardly extending wall protected opening.

3. A cap or closure for containers comprising a top having a depending skirt provided with container securing means, and a sealing member carried by said cap in juxtaposition to its top, said skirt having an inwardly extending wall protected opening located adjacent to the corner of the cap and formed by the projection inward of a part of the top and skirt metal.

4. A cap or closure for containers comprising a top having a depending skirt provided with container securing means, and a sealing member carried by said cap in juxtaposition to its top, said skirt having an opening of substantially pin size located adjacent to the juncture point of the top and skirt for the insertion of a pin or prong of a fork to release the vacuum, the metal around said opening projecting inwardly and forming a guide for the releasing device.

5. A cap or closure for containers comprising a top having a depending skirt provided with container securing means, and a sealing member carried by said cap in juxtaposition to its top, said skirt having an opening of substantially pin size located adjacent to the juncture point of the top and skirt for the insertion of a pin or prong of a fork to release the vacuum, said opening being so located that the pointed instrument will be guided in a substantially horizontal direction.

6. A cap or closure for containers comprising a top having a depending skirt provided with container securing means, and a sealing member carried by said cap in juxtaposition to its top, said skirt having an opening of substantially pin size located adjacent to the juncture point of the top and skirt for the insertion of a pin or prong of a fork to release the vacuum, said opening being so located that the pointed instrument will project at the under face of the gasket thereby to release the same from the top of the container.

7. A cap for containers comprising a top and a depending skirt having a strengthened or beaded lower edge provided with locking lugs and a sealing member carried by the cap in juxtaposition to the top, said skirt having a small round opening adjacent to the juncture point of the top and skirt for the insertion of a pointed instrument.

8. A cap for containers comprising a top and a depending skirt having a strengthened or beaded lower edge provided with locking lugs and having reinforcing corrugations terminating adjacent to the top in an annular band, and a sealing member carried by the cap in juxtaposition to the top, said skirt having a small round opening adjacent to the juncture point of the top and skirt and partly in the annular band for the insertion of a pointed instrument.

9. A metal cap or closure for containers comprising a top extending across and completely closing the mouth of the container and provided with a depending corrugated skirt and a curled or beaded lower edge provided with arc-shaped lugs, said skirt having above said corrugations an opening adjacent to the juncture point of the top and skirt of sufficient size only for the insertion of the prong of a fork or pin.

10. A metal cap or closure for containers comprising a top extending across and completely closing the mouth of the container and provided with a depending corrugated skirt and a curled or beaded lower edge provided with arc-shaped lugs, said skirt having above said corrugations an opening adjacent to the juncture point of the top and skirt of sufficient size only for the insertion of the prong of a fork or pin, said opening being so located as to direct such pointed instrument in a substantially horizontal direc-

tion adjacent to the face of the sealing member.

11. A metal cap or closure for containers comprising a top extending across and completely closing the mouth of the container and provided with a depending corrugated skirt and a curled or beaded lower edge provided with arc-shaped lugs, said skirt having above said corrugations an opening adjacent to the juncture point of the top and skirt of sufficient size only for the insertion of a prong of a fork or pin, said opening being so located as to direct such pointed instrument in a substantially horizontal direction adjacent to the under face of the sealing member.

12. A metal cap or closure for containers comprising a top having a depending skirt provided with container holding means, said skirt having a punch-formed opening located therein adjacent to the juncture point of the top and skirt.

13. A metal cap or closure for containers comprising a top having a depending skirt provided with container holding means, said skirt having a punch-formed opening located therein adjacent to the juncture point of the top and skirt, said opening having the inwardly extending walls of the punched metal forming a guide for a pointed instrument thereby to direct the same in a substantially horizontal direction.

14. A metal cap or closure for containers comprising a top having a depending skirt provided with container holding means, said skirt having a punch-formed opening located therein adjacent to the juncture point of the top and skirt, said opening having the inwardly extending walls of the punched metal forming a guide for a pointed instrument thereby to direct the same in a substantially horizontal direction, said cap having a flat ring gasket, the major part of which is located substantially between the top of the cap and said opening.

15. A metal cap or closure for containers comprising a top having a depending skirt provided with container holding means and a sealing member in the cap, said skirt having a vacuum releasing opening located in the corner of the cap and formed through the metal of both the top and the skirt with the metal of the top projected downwardly and the metal of the skirt projected inwardly transversely thereto.

16. A metal cap or closure for containers comprising a top having a depending skirt provided with a plurality of container holding lugs, a sealing member in the cap, said skirt having a plurality of vacuum releasing openings located adjacent to the corner of the cap one between each pair of lugs with the metal formed from such opening projected inwardly.

Signed at Brooklyn, N. Y., this 7th day of December, 1927.

CHARLES HAMMER.