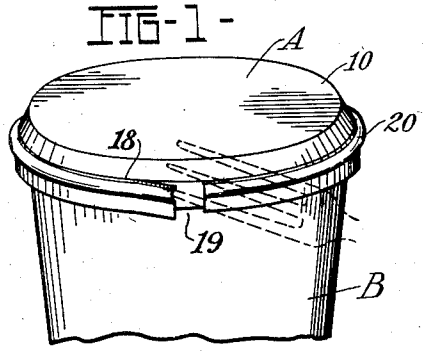
Jan. 31, 1928. 1,657,710

L. R. N. CARVALHO

CLOSURE FOR BOTTLES AND JARS

Filed Jan. 11, 1924

FIG-1-



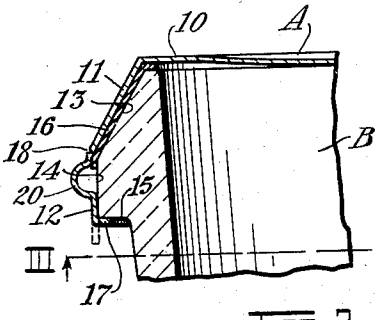


FIG-2-

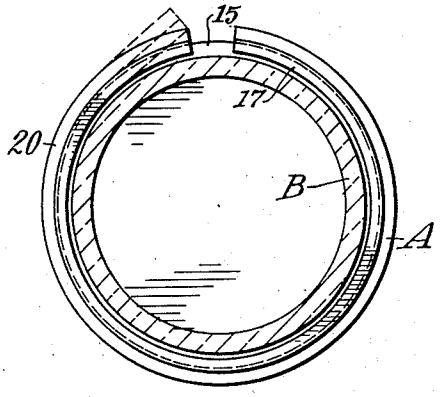


FIG-3-

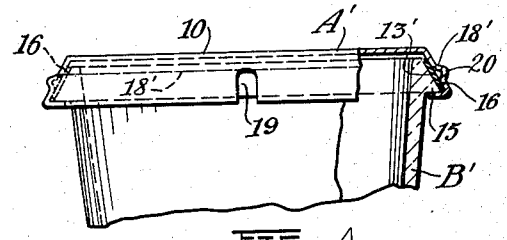


FIG-4-

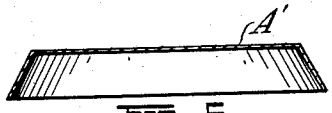


FIG-5-

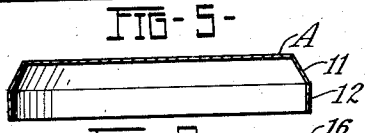


FIG-6-

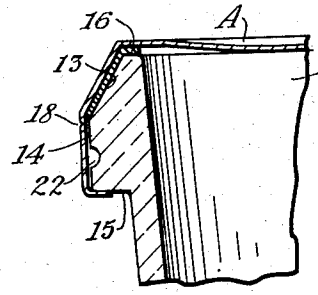


FIG-7-

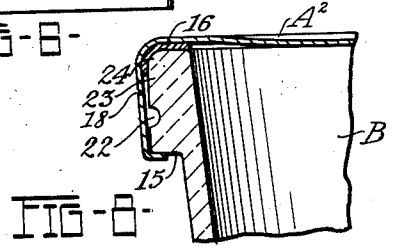


FIG-8-

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By J. F. Rule.

His Attorney.

Patented Jan. 31, 1928. 1,657,710

UNITED STATES PATENT OFFICE.

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CLOSURE FOR BOTTLES AND JARS.

Application filed January 11, 1924. Serial No. 685,530.

My invention relates to caps or closures for glass jars, bottles or other containers and particularly to caps adapted to hermetically seal such containers.

At the present time there are in general use two kinds or types of seals for use on wide mouth containers used for packing fruits and vegetables which require sterilization and which are subjected to internal pressure during the process of heating and sterilizing.

In one of these types, what is known as a top seal is provided, comprising a liner of rubber or composition which is interposed between the top surface of the container and the cap, the cap being sealed by crimping the lower edge of the usual side flange under a shoulder formed on the container. When goods so packed under this type of cap are heated for sterilization, a certain percentage of the caps bulge owing to the internal pressure generated in the container, thereby destroying the hermetic seal and causing leakage. Further difficulty in connection with this type of cap is due to the fire cracks and other imperfections which are frequently present in the upper surface or lip of the container, which prevent a perfect seal.

The second type of seal above referred to is known as a side seal. With this type, the rubber gasket or liner is interposed between the side surface of the container and the vertical flange of the cap, said flange being pressed against the rubber so that the latter is squeezed between the cap flange and the side of the container. This type of seal is unsatisfactory where sterilization is required which generates a pressure within the container, because the cap, being held only by friction, is frequently blown off the container by the internal pressure.

An object of the present invention is to overcome the above difficulties by the provision of a cap and container with a seal which combines the advantages of both the above mentioned types and is free from the objections above noted.

The invention in its preferred form comprises a cap in which the flange portion is inclined or flared throughout a part or all of its depth to fit a correspondingly shaped container. A liner of rubber, composition or other suitable packing material is interposed between the inclined faces of the container and cap and a tight seal effected by crimping or bending the lower edge of the cap flange beneath a square shoulder formed on the container.

Other features of the invention and the precise nature thereof will appear more fully hereinafter.

In the accompanying drawings:

Figure 1 is a perspective view of a container and cap constructed in accordance with my invention.

Figure 2 is a fragmentary sectional elevation of the same.

Figure 3 is a section at the line III on Figure 2.

Figure 4 is a part sectional elevation of a modified form of container and cap.

Figure 5 is a section of a partially formed cap adapted for use on the container shown in Figure 4.

Figure 6 is a similar view of a partially formed cap adapted for the container shown in Figures 1 and 2.

Figure 7 is a view similar to Figure 2, showing a modified means permitting the removal of the cap.

Figure 8 is a view similar to Figure 7, but showing a further modification in the form of the cap and container.

Referring particularly to Figures 1, 2 and 3, the cap or closure A comprises a circular top 10 and a skirt or flange including an inclined flange portion 11 and a vertical flange portion 12. The jar or other receptacle B to which the cap is applied, has an annular tapered or inclined exterior surface 13 from the lower edge of which a vertical face 14 extends downward and terminates at a horizontal annular surface or shoulder 15 formed on the container.

A liner or gasket 16 formed of rubber or a composition is interposed between the inclined portion 11 of the cap and the surface 13 of the container. If desired, the liner may extend over the upper surface of the container and also may extend a greater or less distance vertically downward over the surface 14. In some instances, it is preferable to use a narrower liner which engages only the inclined surfaces. The lower edge 17 of the flange 12 is turned inward or

crimped beneath the shoulder 15 to seal the cap on the container.

In order to permit the cap to be readily removed from the container, a score line 18 is provided which extends circumferentially of the cap and terminates at both ends in a notch or cut-away portion 19 extending from the lower edge of the flange upward to the score line. Beneath the score line a bead 20 is rolled in the cap and is preferably co-extensive in length with the score line. By inserting any convenient pointed implement, as for example, the tine of a fork, behind the bead 20 at the notch 19, the flange portion or strip beneath the score line may be easily removed either by causing the fork to follow around the container or by starting the strip at the notch 19 to give a finger hold, and then tearing it off independently of the starting implement.

The cap A is preferably made of a single piece of flat sheet metal which is bent to the shape shown in Figure 6 before it is applied to the container. This method of forming the cap differs in this respect from the usual method which consists in applying a flat disk to the container and then bending it into shape. After the cap has been shaped as shown in Figure 6, the bead 20 is rolled therein and the score 18 is formed. When the cap is applied to the container with the gasket 16 in place, suitable pressure is applied to the top surface of the cap and if desired, also to the inclined surface 11, and the lower edge 15 is then crimped or turned from the dotted line position (Fig. 2) to the full line position beneath the shoulder 15, thereby sealing the cap in position on the container.

It will be noted that this construction is particularly adapted for securely sealing hermetically a cap on a container for vegetables, fruits or other products which during sterilization or other process of preparation and manufacture, subject the container to an internal pressure. It provides a side seal in which the sealing ring or material 16 is applied to the side surface of the container while at the same time the cap is positively held in position by the holding flange 17 and thus prevented from being blown off under pressure. The lateral surface 13 is also free from the usual fire cracks or other defects which commonly appear in the top surface of the container, so that a more perfect seal is provided than where the top surface only is relied on as the sealing surface. Moreover, the form of cap here shown will not permit leakage or destroying of the seal by bulging of the cap under internal pressure as is common when the seal is applied to the upper surface or lip of the container.

In the form of invention shown in Figure 4, the container B′ is provided with an inclined lateral surface 13′, the lower edge of which terminates at the shoulder 15 formed on the container. The score 18′ is in this instance shown on the inner surface of the cap, directly above the bead 20. The cap A′ is given the initial formation shown in Figure 5 before it is applied to the container. The method of sealing the cap on the container is substantially the same as that above described in connection with the cap A (Fig. 2).

Figure 7 illustrates a modified means to permit the removal of the cap. As here shown, an annular recess or groove 22 is formed in the surface 14 of the container, said groove preferably extending the entire circumference of the container. This groove serves a similar purpose to the bead 20 in Figure 1, as it permits an implement to be inserted between the removable strip and the container for ripping the strip off.

Figure 8 shows a further modification in the form of the cap A^2 and the container. In this instance, the side surface 23 is substantially vertical from the top of the container to the shoulder 15, except that the upper corner 24 is rounded. The packing ring 16 may be positioned to engage both the vertical and horizontal surfaces of the container.

The inclination of the sealing surface 13 or 13′ may be varied if desired. In some instances a more nearly vertical sealing surface is desirable. Other modifications may be resorted to within the spirit and scope of my invention.

What I claim is:

1. The combination of a container having a downwardly and outwardly inclined annular surface extending from the upper surface of the container and terminating at the upper edge of a vertical annular surface, said container formed with a horizontal annular shoulder at the lower edge of the vertical surface, a cap for said container formed with inclined and vertical flange portions respectively parallel with and arranged to fit the said inclined and vertical portions of the container, the lower edge of said vertical flange portion being inturned to engage beneath said annular shoulder, and a flat gasket covering said inclined surface and held under compression by the cap.

2. The combination of a container formed with a groove in a lateral surface thereof, said groove extending circumferentially of the container, and a cap for the container comprising a flange portion extending downward over said groove, said cap formed with a score line extending circumferentially of the cap adjacent said groove.

3. The combination of a container formed with a groove in a lateral surface thereof, said groove extending circumferentially of the container, a cap for the container comprising a flange portion extend-

ing downward over said groove, said cap formed with a score line extending circumferentially of the cap adjacent said groove, and a notch extending from the bottom edge of the cap to the score line.

4. The combination of a container and a cap therefor, said container being formed with a groove or recess in its outer surface extending circumferentially of the container, said cap comprising a flange portion extending downward over said recess and formed with a score line above said recess.

5. The combination of a container and a cap therefor, said container being formed with a groove or recess in its outer surface extending circumferentially of the container, said cap comprising a flange portion extending downward over said recess and being cut away at a point over said recess to permit the insertion of an implement in said recess behind the flange, said flange formed with a score line extending circumferentially of the container above and parallel with said recess and termating at said cut-away portion.

Signed at Toledo, in the county of Lucas and State of Ohio, this 8th day of January 1924.

LESLIE R. N. CARVALHO.