

March 19, 1940.

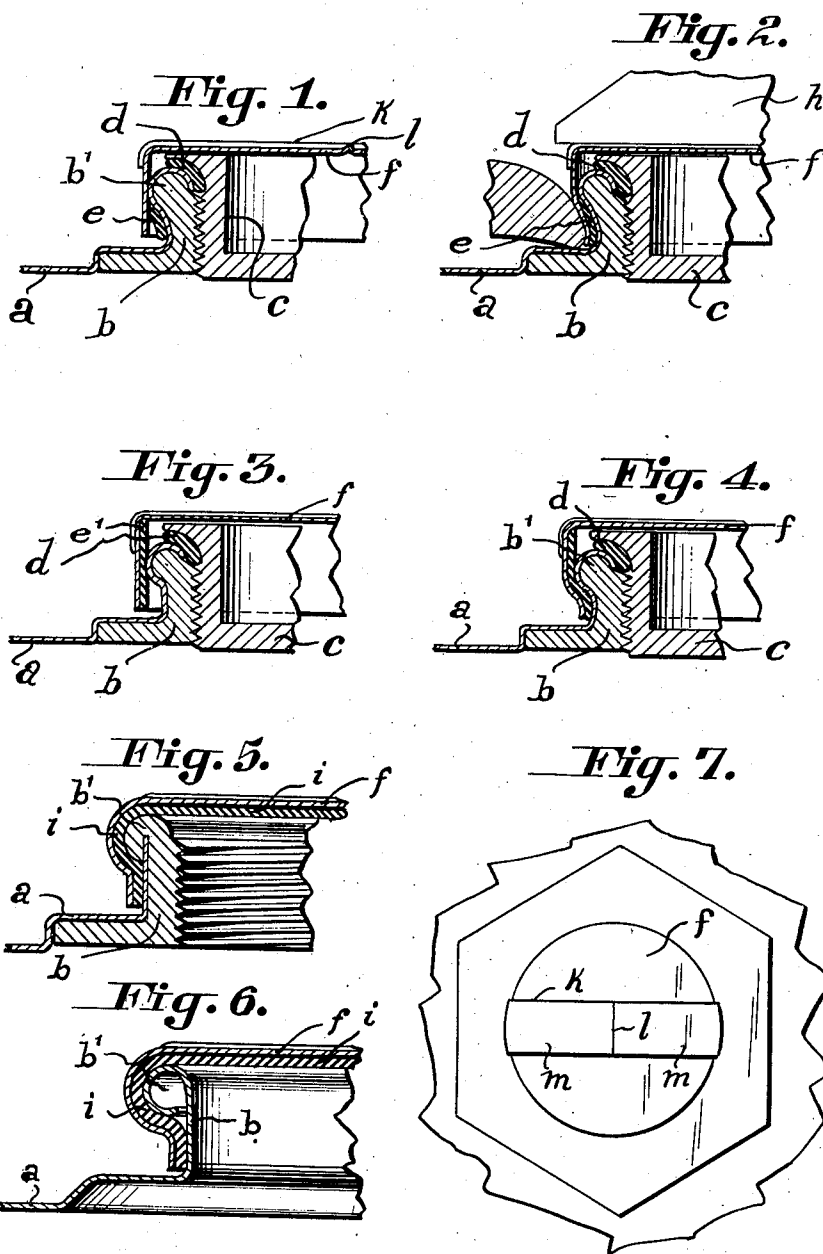
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2,194,147

PACKING OF A SEALING CAP FOR THE SEALING AND TIGHTENING
OF CONTAINER CLOSURES, ESPECIALLY BUNG CLOSURES

Original Filed Dec. 1, 1934

2 Sheets-Sheet 1



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Fig. 8.

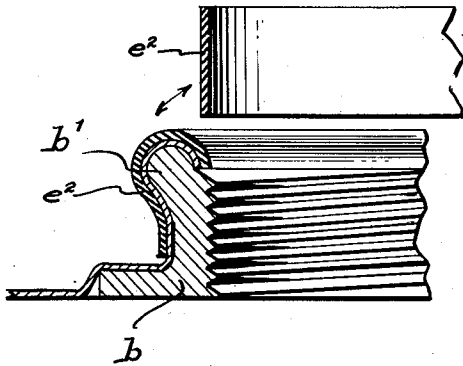


Fig. 9.

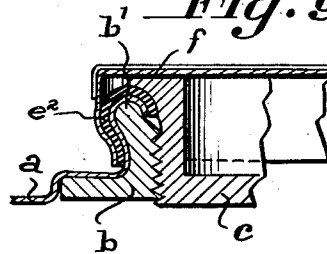


Fig. 10.

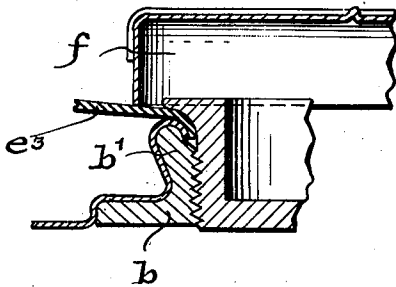
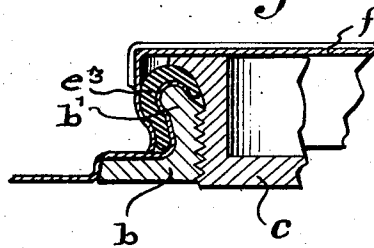


Fig. 11.



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UNITED STATES PATENT OFFICE

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PACKING OF A SEALING CAP FOR THE
SEALING AND TIGHTENING OF CON-
TAINER CLOSURES, ESPECIALLY BUNG
CLOSURESAlfons Mauser, Marienburg, Cologne, Germany,
assignor, by mesne assignments, to N. V.
Serlox, The Hague, NetherlandsApplication December 1, 1934, Serial No. 755,592.
Renewed December 28, 1938. In Brazil De-
cember 21, 1933

2 Claims. (Cl. 220—39)

This invention relates to a packing for sealing caps for the sealing and tightening of container closures, especially bung closures, wherein the cap surrounds with its edge an annular flange provided at the opening of the container and serving as an abutment.

It is known to use the cap for an additional sealing by providing a packing between the edge of the opening and the upper part of the cap. In order to make such sealing effective, considerable pressure must be exerted on the top of the cap while the edge of the cap is drawn in, by means of a pressing tool, beneath the annular flange of the container opening, the annular flange serving as an abutment. Containers having bung closures are usually made of very thin material so that the pressure exerted on the cap leads to a deformation of the parts of the container. Locking tools have been proposed wherein only a pressure exerted radially on the cap edge must cause the cap to make an axial movement, the cap sliding downwards when drawn in against the annular flange surface which is inclined downwards. This assumption has proved to be incorrect. When the radial pressure is exerted on the edge of the cap, the upper part thereof which is stiffened by the top of the cap affords the greatest resistance so that when the flexible lower edge is drawn in, the cap slips upward instead of downward. This undesired counteracting could be prevented by abutments provided on the cap edges for the clamping jaws which effect the drawing in. However, it is necessary in connection with the sealing caps that the drawn-in cap edge bears tightly, and without leaving a projection, against the neck of the annular flange of the opening of the container so as to prevent any inducement for an unauthorized manipulation of the sealing cap. Consequently, in connection with such a sealing method of the sealing cap, the exertion of considerable axial pressure on the cap cover when locking the same is unavoidable if the sealing is to be effective. In such cases, as for instance in bung closures, wherein the packing by the above-described cap sealing method cannot take place directly upon the body of the container, the additional sealing effect does not take place. Finally, the tightening is greatly affected by the upper part of the annular flange being damaged which easily occurs for obvious reasons.

The aforesaid drawbacks are obviated by the present invention. According to the invention, the sealing cap is provided in the interior of the edge to be drawn in with a compressible lining

or covering of cork, rubber, asbestos or the like, or the outwardly extending part of the closure opening is provided therewith. Band-like material prepared from waste at low cost may be used for the aforesaid sealing, or a homogeneous or adhesive applying of the packing material may take place. The sealing cap provided with such a packing effects by only a lateral pressure exertion on the edge to be drawn in an absolutely reliable sealing against the annular flange and collar of the closure opening. Consequently, the previously requisite simultaneous exertion of an axial pressure on the cap is dispensed with. The sealing thus acts all the more favorably since the lateral faces of the projecting edge of the closure are not subjected to any possibilities of being damaged. The thickness of the packing may be comparatively small owing to the possibility of exerting a strong lateral pressure. If necessary the entire sealing cap may be lined with a compressible packing material and a suitably preliminarily pressed cap of packing material may be inserted in the sealing cap. There results therefrom the possibility of providing a packing along the entire outer part of the closure edge, including the upper part of the annular flange of the container closure, since the locking tool is provided with means which, when drawing in the edge of the cap, presses the cap cover against the annular flange and prevents an escape of the cap upwards. This fact complies with the desire to use the sealing cap as sealing means and as the sole packing means. The omission of the usual sealing means as for instance bung plugs with packing results in a great saving in the cost price of the closure.

The lateral arrangement of the packing allows of the notch lines being extended over the edge of the sealing cap without the sealing being thereby affected. The removal of the cap at the opening of the closure is thereby greatly facilitated because the remaining portion of the edge can be pulled through without any difficulty. It is thus also possible to make the cap of thicker material.

A further essential advantage is obtained with the invention by simplifying the sealing of the closure. For instance, in bung closures, the packing, which is provided externally and laterally around the collar of the outwardly extending flange of the container is so proportioned that it also surrounds the edge of the annular flange of the container closure inwardly and serves simultaneously as bung packing and cap packing. In the event of using an ordinary packing ring or

gasket of flat rubber which is smaller in diameter than the outwardly extending annular flange, the packing ring will automatically fit tightly around the annular flange inwardly when the packing ring is stretched around the collar of the container flange. The bung plug may be directly screwed in and the sealing cap mounted thereon. A further substantial saving in the cost price results from the omission of the special bung plug packing.

With reference to the accompanying drawings, some constructional forms of the invention are shown therein.

Figure I shows a bung closure, wherein a bung bush *b*, externally surrounded by the body of the container, is provided with an annular flange which projects outwardly in the upper part. The closure is effected by the packing *d* and by the bung *c* adapted to be screwed in the bung bush. The cap packing *e* is placed around the receding neck of the opening edge *b*. The sealing cap *f* is loosely slipped over the sealing means and not yet flanged.

Figure II shows the same bung closure as Figure I, the edge of the sealing cap *f* being drawn in through the jaws *g* of the locking tool and tightly pressed against the packing *e*. When tightening the edge of the cap, a holding member *h* of the locking tool bears on the sealing cap *f* and prevents the same from sliding upward. The cap bears on the bung plug *c* whereby the sealing of the sealing cap *f* against the outwardly inclined and upwardly rising flange edge becomes effective. The lower edge of the sealing cap is pressed tightly against the collar of the opening edge so that unauthorized manipulations by means of a tool are prevented. The arrangement of the packing *e* on the flange of the container allows of the packing being used several times.

Figures III and IV show the same closure as Figures I and II. The packing *e*¹ is provided in the collar edge of the sealing cap *f*. Figure III shows the sealing cap before the tightening of the edge while Figure IV shows the ready mounted and sealed cap *f*.

In the constructional form according to Figure V, the sealing cap *f* is completely lined with a packing material or a complete packing cap *i*. The packing is effected on the entire outer part of the opening edge including the upper part of the annular flange *b*¹. This effective sealing by means of the sealing cap eventually dispenses with the insertion of a bung plug or the like.

Figure V also shows another form of the bung bush securing means. The packing of the sealing cap *f* against the body *a* of the container is only rendered possible in such a bung closure by the arrangement of the cap packing *e*, *i* according to the invention.

The constructional form according to Figure VI differs from that of Figure V in that the opening edge is formed with the annular flange *b*¹ of the material *a* of the container. This is a simplified form of the closure wherein the sealing cap serves simultaneously as sealing means and locking means.

Figure VII is a plan view of the closure with

the sealing cap *f*. This figure and also Figures I to IV show how the notch lines *k* are provided over the edge of the cap *f*. When removing the sealing cap, this is punched through along the notch line *l* arranged in the center so that the strips *m*, which extend on both sides and are limited by the notch lines *k*, may be torn off.

Figures VIII and IX show the same bung closure as Figures I to IV. The cap packing *e*² extends over the annular flange *b*¹ so that it is used simultaneously as cap packing and bung plug packing. Figure VIII shows how the cylindrical packing ring *e*² of flat rubber, which is smaller in diameter than the annular flange *b*¹ bears tightly around the annular flange *b*¹ inwardly when the packing ring is stretched around the collar *b* of the bung. Figure IX shows the closure according to Figure VIII with screwed in bung *c* and ready mounted sealing cap *f*. It is shown in Figures X and XI as compared with the illustration in Figures VIII and IX how a flat or conical packing ring disk *e*³ adapted to the bung packing surface can be used instead of a cylindrical packing ring *e*². It is obvious from Figure X how the outwardly extending annular disk *e*³ is pressed downward by the sealing cap *f* and placed around the annular flange *b*¹. Figure XI shows the completely sealed closure with the mounted sealing cap *f* and packing *e*³ pressed thereon.

It is obvious that instead of the rubber packings *e*³ and *e*² indicated by way of example, packings consisting of other compressible material may also be used. The packings may also be preliminarily pressed in a form adapted to the annular form.

I claim:

1. In a structure of the class described, a container having a wall and an opening therein, a flange surrounding said opening having a substantially annular external surface and an outer edge, a sealing cap applied over said flange and having a skirt portion surrounding the latter, a closure plug fitted in said opening, and a compressible packing member interposed between the skirt of said cap and the external surface of said flange and extending inwardly around the edge of the latter and being interposed between said edge and said plug thereby forming a seal between said plug and said flange and between said flange and said skirt.

2. In a structure of the class described, a container having a wall and an opening therein, a flange surrounding said opening and constituted by said wall, said flange having a substantially annular external surface and an outer edge, a sealing cap applied over said flange and having a skirt portion surrounding the latter, a closure plug fitted in said opening, and a compressible packing member interposed between the skirt of said cap and the external surface of said flange and extending inwardly around the edge of the latter and being interposed between said edge and said plug thereby forming a seal between said plug and said flange and between said flange and said skirt.

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