

Oct. 22, 1935.

H. A. BARNBY

2,018,006

METAL CLOSURE

Filed March 9, 1935

2 Sheets-Sheet 1

FIG-1-

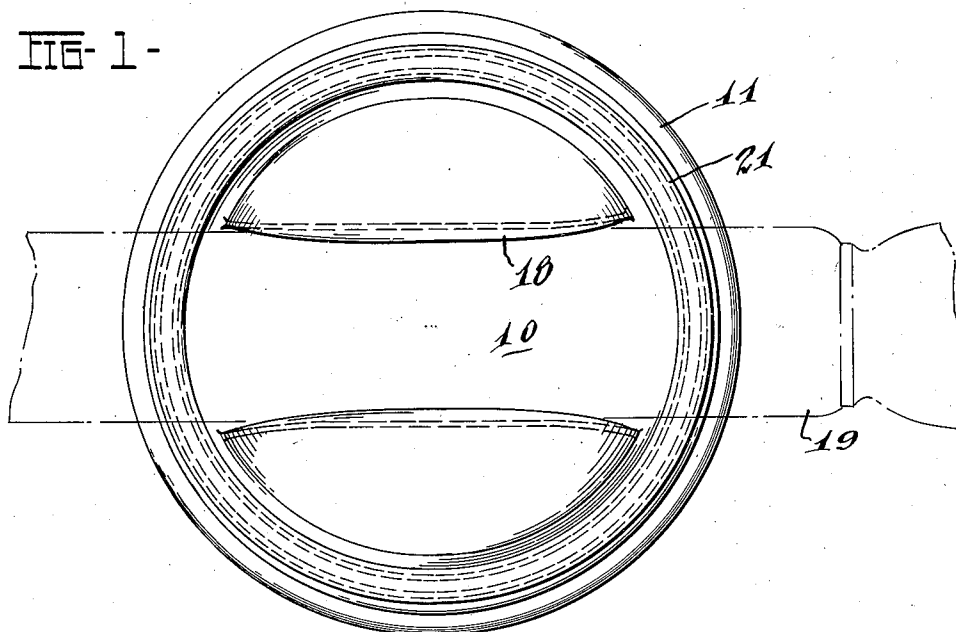


FIG-2-

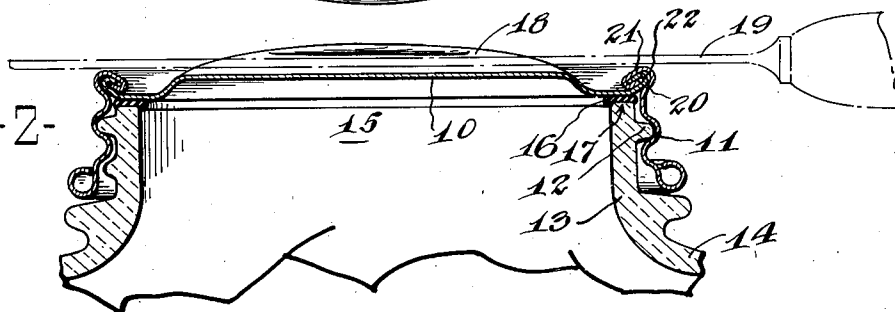


FIG-3-

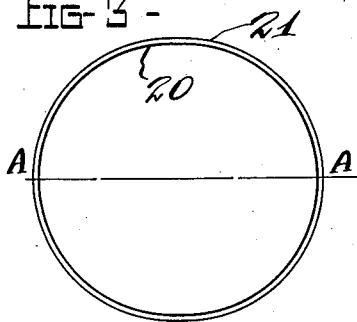


FIG-4-

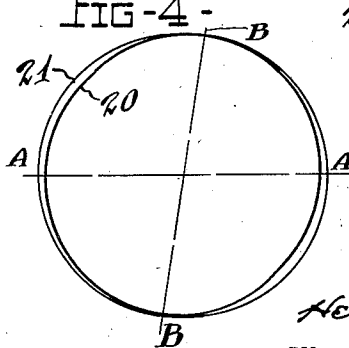
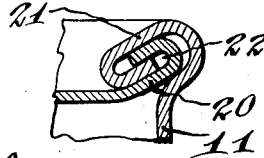


FIG-4A-



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2 Sheets-Sheet 2

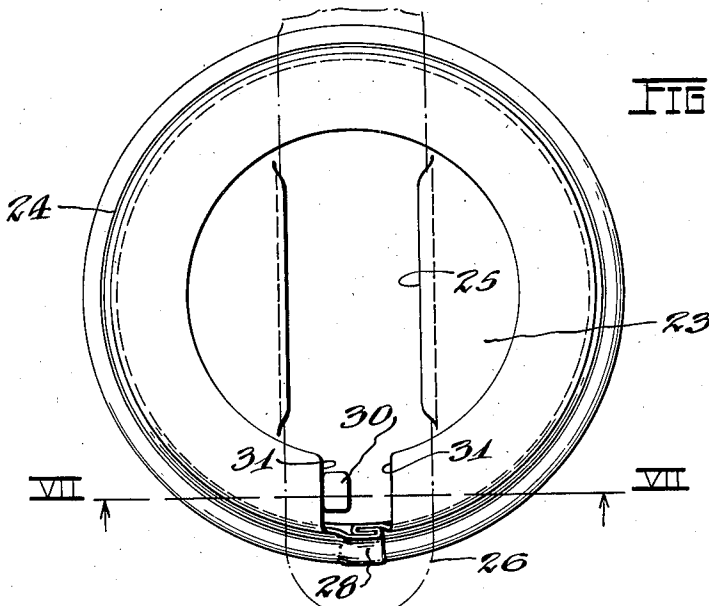


FIG-5 -

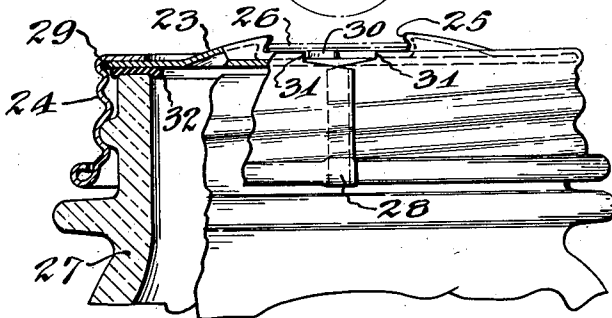


FIG-6 -

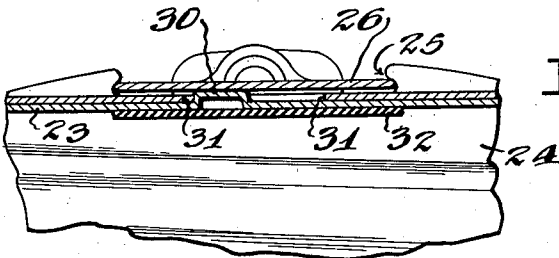


FIG-7 -

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METAL CLOSURE

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Application March 9, 1935, Serial No. 10,273

6 Claims. (Cl. 215—43)

The present invention relates to improvements in metal closures and more particularly to the well known screw type closures used in connection with bottles and jars.

Closures of this type ordinarily consist of integral top and threaded attaching flange portions and a sealing ring or gasket which is brought into firm engagement with the finish or sealing surface of the container. To varying degrees, dependent largely upon the nature of the contents of the jar, the top portion, sealing ring and finishing become more or less firmly united so that considerable difficulty is frequently encountered in removing the closure. Such adhesion of these elements, together with the necessary frictional contact between the screw threads of the container and closure, create a condition under which it is often extremely difficult to remove the closure.

An object of the present invention is the provision of novel and effective means for overcoming the above objections without resorting to a complicated and expensive construction.

Another object is the provision of means whereby the initial closure removing operation necessitates relative movement between the container neck and either the attaching flange or top portion of the closure. Thus, any resistance to the user's attempts to remove the closure, will at the outset consist only of that represented by the frictional contact between the threads on the closure and container or the adhesion between the top portion, sealing ring and container finish, depending upon whether the attaching flange or top portion is being gripped or otherwise engaged by the medium for rotating the closure.

A further object is the provision of a screw type metal closure in which the construction is such as to permit a limited degree of relative rotary movement between the circular top portion and screw threaded attaching flange whereby either element may be rotated a predetermined distance independently of the other and thereafter impart rotary movement to said other element.

A still further object is the provision in a closure of the above character of novel means for so connecting the top portion and screw threaded attaching flange that limited relative rotation therebetween may be obtained. To this end the construction may include beads more or less elliptical in form provided at the juncture of the circular top portion and attaching flange, said beads providing a more or less loose rotary

connection between said elements. If preferred, the construction may include circular top and attaching flange portions rotatively connected and provided with a boss on one part movable therewith between circumferentially spaced stops on the other part.

Other objects will be in part apparent and in part pointed out hereinafter.

In the drawings:

Fig. 1 is a top plan view of a closure embodying one form of the present invention.

Fig. 2 is a detail vertical sectional view thereof.

Fig. 3 diagrammatically illustrates the normal relation between the connecting beads of the top portion and attaching flange.

Fig. 4 is a view similar to Fig. 3, but shows the manner in which the beads operate to lock the top portion and flange together, following a predetermined degree of rotation of one of said elements.

Fig. 4A is a detail sectional view of the means for connecting the attaching flange and top portion.

Fig. 5 is a top plan view of a closure embodying another form of the invention.

Fig. 6 is a fragmentary side elevational view with parts in section.

Fig. 7 is a fragmentary sectional view taken along the line VII—VII of Fig. 5.

In that form of the invention shown in Figs. 1 to 4A inclusive, the closure includes a circular top portion 10 and threaded attaching flange 11 or skirt, which is adapted to engage threads 12 encircling the neck 13 of a container 14, said neck defining a filling and discharge opening 15. A sealing gasket 16 or ring is interposed between the marginal areas of the circular top portion and the finish 17 or sealing surface of the container. This sealing gasket may be attached to and carried by the closure. If preferred, the top portion may include a transverse upwardly facing channel 18 or groove, designed to accommodate the blade of a knife 19 or some other device usable as a lever by means of which application and removal of the closure may be facilitated.

According to the present invention, the top portion and attaching flange are connected together in a fashion to permit independent rotary movement of one of these elements at the beginning of either the closure applying or removing operation. To accomplish this, the connection between these elements consists of interlocking beads 20 and 21 at the adjacent margins of the

top portion 18 and attaching flange 11 respectively, these beads being more or less elliptical in top plan. The margin of the top portion may well be turned upwardly and then folded inwardly upon itself providing an inwardly facing annular pocket 22 into which the upper marginal portion of the skirt or attaching flange, projects.

Normally the two elements are so relatively positioned that the beads 20 and 21 are disposed about as shown in Fig. 3 in which the major axes coincide with a line A—A. It is apparent that such a construction and arrangement will allow a predetermined degree of rotary movement of either element independently of the other and that at a certain point, the two elements will become interlocked and thereafter rotate together. Assuming that removal of the closure is obtained by means of an implement engaged with the top portion, the latter will be rotated independently of the attaching flange to approximately the point indicated by the line B—B where it will become firmly engaged with the skirt portion. From this point on, the two elements will rotate together. If on the other hand, the attaching flange is engaged by a rotating device in lieu of the procedure just described, this attaching flange will rotate a short distance independently of the top portion and then firmly engage the latter so that the two elements will rotate together.

In another form of the invention, Figs. 5, 6, and 7, the circular top portion 23 and screw threaded attaching flange 24 are secured together in a fashion to definitely limit the possible extent of independent rotation of the elements. The top portion includes a transverse upwardly opening channel 25 to accommodate a knife blade 26, or the like implement, which may be employed in applying or removing the closure. The attaching flange 24 which is threaded upon the neck of the container 27 may be formed from a strip of sheet metal, the ends of which are connected together by a vertical seam 28. The upper margin of the attaching flange is turned radially inward and overlies the marginal area of the top portion, the circular edge of which more or less loosely fits into an annular internal recess 29 at the juncture of the inturned margin of the attaching flange and the flange proper. Thus, the two elements are assembled in a fashion permitting independent rotary movement thereof.

Such independent rotary movement of these elements is limited by means of an upstanding boss 30 provided adjacent the margin of the circular top portion and the formation of a pair of circumferentially spaced stops 31 on the inturned portion of the attaching flange. With this construction, it is apparent that either the attaching flange or top portion may be rotated a short distance to facilitate removal of the closure. If the closure is being removed by means of a knife 26 or similar implement, the top portion 23, will rotate a short distance independently of the attaching flange and break the seal which has

been maintained by the sealing gasket 32 or ring. Upon engagement of the boss 30 with one of the stops 31, and continued rotation of the top portion, the attaching flange will begin its rotary movement and from this point on the two elements will rotate together.

Modifications may be resorted to within the spirit and scope of the appended claims.

I claim:

1. In combination, a container having an externally screw threaded neck defining a filling and discharge opening, a closure for said opening comprising a top portion, a sealing gasket, a threaded attaching flange extending about and depending from the margin of said top portion and means providing rotary connection between the flange and top portion but restricting the relative rotation to less than a complete revolution of either the flange or top portion.

2. In combination, a container having an externally screw threaded neck defining a filling and discharge opening, a closure for said opening comprising a top portion, a sealing gasket, a threaded attaching flange extending about and depending from the margin of said top portion, means providing rotary connection between the flange and top portion but restricting the relative rotation to less than a complete revolution of either the flange or top portion, said means including interlocking beads at the periphery of the top portion and upper margin of the attaching flange, said beads being elliptical in top plan.

3. A metal closure comprising a top portion, a screw threaded attaching flange separate and depending from the margin of the top portion, means providing rotary connection between the adjacent margins of the top portion and flange and means whereby such independent rotary motion is restricted to less than a complete revolution of either the flange or top portion.

4. A sheet metal closure comprising a top portion, an attaching flange extending about the margin of said top portion and means consisting of interlocking elliptical beads rotatively connecting the top portion and flange.

5. A metal closure comprising a circular top portion, a separate screw threaded attaching flange depending from the margin thereof, means providing rotary connection between said top portion and flange, a boss formed on one of said elements and circumferentially spaced stops provided on the other of said elements spaced from and adapted to engage said boss at times and thereby limit the degree of relative rotation between the top portion and flange.

6. A metal closure comprising a circular top portion, an attaching flange rotatively connected to and depending from the margin of the top portion, a boss carried by the top portion and circumferentially spaced stops on the flange adapted to engage the boss and limit the degree of relative rotation between the top portion and flange.

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